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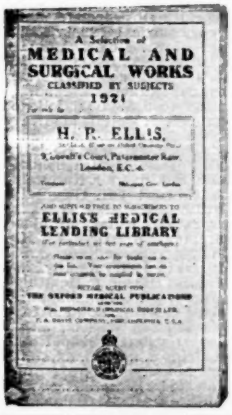

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LECTURE III.*

IN my last lecture I endeavoured to show that flying strain, in its physical aspect—i.e., apart from the mental aspect—is characterised in many cases by a diminution of the vital capacity, a loss of expiratory tone, and an instability of the medullary centres—conditions which frequently lead to signs of cardio-vascular insufficiency and general nervous instability. Such a bodily condition is not confined to airmen, but may frequently be found in those who have never taken part in flying. It is a condition especially characteristic of bodily inefficiency and of lack of bodily endurance; it may occur in those who have led sedentary lives or who have been debilitated by disease. For bodily efficiency I have put forward for consideration certain points which may be summarised as follows:—

1. Efficient inspiration is necessary for the proper distension of the lung in all its parts. Diaphragmatic breathing is particularly important, otherwise the apex of the lung is not adequately expanded and becomes particularly liable to attack by tuberculosis. By virtue of lack of exercise, trade occupations, mode of clothing, &c., the inspiration of many people of the present day is defective and of wrong character, which may help to account for the relatively large amount of tuberculosis of the lung found in town dwellers during the taking of the war physical census.

2. For efficient respiratory interchange of gases under circumstances demanding the full respiratory ventilation capacity it is important that the residual air left in the lungs at the end of deep expiration be as near the physiological minimum as possible. This is brought about by active expiration, the contraction of the abdominal muscles being the most important. Fit individuals are possessed of good abdominal tone. When such abdominal tone is lacking the vital capacity of the individual falls away, the residual air increases in amount, the ventilation capacity of each breath is diminished, and the individual becomes easily breathless, panting to ensure sufficient ventilation instead of breathing deeply.

With this increase in the residual air there is a tendency, owing to the condition of slight anoxæmia induced, for the respiratory and other bulbar centres to become more excitable, a condition which, in many cases, reflects an increased irritability of the whole nervous system. This condition is found particularly in neurasthenia due to stress, and it is possible that this respiratory defect may in some cases be actually the exciting cause of the nervous condition.

3. By virtue of the effect of gravity the assumption of the upright posture in man has thrown stress upon the circulatory mechanism. One of the chief adjuncts to the heart in combating this stress is efficient respiration. During inspiration the downward plunge of the diaphragm, during expiration the contraction of the muscles of the abdominal wall, play a great part in the forcing of blood onwards from the venous reservoir towards the heart. The tone of the abdominal muscles is particularly important; when this is lost blood tends to collect in the abdominal vessels and the diastolic pressure in the arteries to fall. It is this condition which probably accounts for the large percentage of cases of venous varix found among the general population during the war physical census.

4. Efficient respiratory movements are necessary for the preservation of the muscular tone of the alimentary tract. Deficient respiration is indirectly a cause of constipation and its attendant ills. The deep respirations induced by exercise massage the intestines and serve to combat the tendency to constipation which arises from a sedentary life or occupation. In this connexion good tone of the belt of abdominal musculature is also of particular importance.

NECESSITY OF SIMPLE EXERCISES FOR SEDENTARY WORKERS.

It will be seen that in addition to attaching importance to efficient respiratory movements considerable stress is laid upon the disadvantage of the upright posture in man. The evolution of the upright posture was gradual, but it was characterised by much bodily activity, by which the whole belt of abdominal musculature was efficiently developed. To-day, however, after a period of bodily activity in infancy during which the upright posture is gradually assumed, and after a childhood for the most part fairly active, man does not take, either on account of the nature of his employment or through lack of opportunity, the exercise necessary to maintain the tone of the abdominal musculature and thus preserve efficient respiration and circulation. Hence bodily inefficiency develops as was shown by the figures of the war physical census; this is particularly the case when the days of childhood and childish activity are passed and the struggle for life under modern conditions begins. There is a marked deterioration in efficiency between the years of 18 and 23, which is particularly marked in those whose occupations do not lend themselves to the expenditure of great physical energy. It is obvious that if man is to continue to be fit physically and to preserve bodily endurance, efficient respiration and circulation must be maintained. One of the most urgent needs of the moment is some set of simple exercises which will so maintain the efficiency of the individual that he will remain fit for the continuous sedentary life which is the lot of so many people at the present day, and also preserve such a state of bodily efficiency as will allow of indulgence in occasional exercise without undue fatigue of the respiratory and circulatory mechanisms. At present it frequently happens that when exercise is taken by a person leading a sedentary life there is a failure of such mechanisms, with the result that the exercise induces profound lassitude and does more harm than good.

ILL-EFFECTS OF INDISCRIMINATE PHYSICAL TRAINING.

It is a common experience that as the result of a course of physical training in recruits certain individuals are in no way benefited but rather deteriorate, and have to be sent to the medical officer for his opinion as to their efficiency. There is no doubt that this is because the exercises employed in most systems of physical training are not devoted, in the first place, to building up respiratory and circulatory efficiency. Under ordinary circumstances attention is devoted to general muscular development and accurate muscular coördination particularly of the limbs. In most systems of physical training it is a matter of good fortune rather than of foresight that in the majority of individuals respiratory and circulatory efficiency are developed at the same time. In the individuals who break down the respiratory and circulatory mechanisms are not equal to the stress imposed upon them by the system of training. If in the first place attention were directed to the attainment of respiratory and circulatory efficiency, such individuals with graduated training would not fail. This can be seen from the results obtained upon a batch of what might almost be termed "C 3" recruits. For the experiment a batch of 50 such recruits was taken. They were tested by certain of the physical efficiency tests and divided into two groups—man for man of relatively equal efficiency. One batch was placed upon physical training without special circulatory and respiratory exercises, the other upon a few special circulatory and respiratory exercises

* Lecture I. was published in THE LANCET of Sept. 17th and Lecture II. appeared on Sept. 24th and Oct. 1st.

which were to be done daily before the ordinary physical training began. At the end of a month they were placed together and again examined without questions being asked and in such an order that it was not possible to know to which group the recruit belonged. Unfortunately the exigencies of the service at the time caused a loss of 13 recruits from each batch. From the table below it will be seen that the individuals who had had the special respiratory and circulatory training improved considerably more than did those who had no such training. It is interesting to note that in the former the pulse-rate per minute is greatly reduced, the power to hold the breath and the expiratory force increased, and the bodily endurance as shown by the 40 mm. Hg test raised almost to normal. Such is not the case with the other group. The result in regard to vital capacity is interesting as showing the fact that a good midday service meal considerably decreases the vital capacity of certain individuals who were examined shortly after the meal. When examined next day about 11 A.M., it was found that there was reduction of the vital capacity in only one individual. It is also of interest that many of the individuals who had had the special exercises voluntarily offered statements to the effect that their "wind was greatly improved" or "they could now run without getting blown." (Table I.)

TABLE I.

Two groups of records with and without special exercises.	Pulse standing per min.	After exercise per min.	Return to normal in secs.	Vital capacity in c.cm.	Expiratory force in mm. Hg.	40 mm. test in secs.
Group A.						
Before training ..	89·3	115	26·4	3906	88	32·5
After training ..	84	107	25	3840	95	33·8
Group B. (Special exercises.)						
Before training ..	95	119	26·6	3673	84·6	33·8
After training ..	79	97	19·1	3837	117	46

As showing some of the best results obtained, the individual results of three recruits on the special exercises are given. (Table II.)

TABLE II.

Three individual recruits.	Records before and after the special exercises.	Pulse standing.	After exercise.	Return to normal.	Vital capacity.	Expiratory force.	Secs. of supporting 40 mm. Hg.
Bo.	Before.	96	120	30	3580	86	22
	After.	84	96	15	3790	128	37
Br.	Before.	108	132	20	3480	90	38
	After.	96	108	15	4000	114	64
Co.	Before.	96	120	40	4080	78	22
	After.	72	96	20	4520	88	47

It is not suggested that an experiment with such small numbers is conclusive, and it is hoped, when the conditions of the service permit, to undertake a similar experiment with a much larger number of subjects.

My friend, Squadron-Leader H. Harvey, R.A.F.M.S., has made extended observations upon subjects during their course at the School of Physical Training. His results show that certain individuals fall away as regards respiratory and circulatory fitness after a strenuous period of training, the individuals themselves being aware of the fact that they are going "stale." Any system of physical training should first and foremost make a man fit as regards the circulatory and respiratory systems, giving him a pulse not unduly quickened by exercise, a high diastolic pressure within physiological limits (80–90 mm. Hg), efficient respiratory capacity, and good expiratory force.

A SYSTEM OF TEN EXERCISES.

I have, therefore, elaborated a system of ten exercises which take about ten minutes daily to perform, based upon the physiological principles already laid down. In devising these exercises I have looked to nature for guidance, incorporating so far as possible, natural movements. The human baby takes about 12 months before it assumes the upright posture. During this time it performs its own system of physical exercises. Observation shows that these consist, at first mainly, of leg movements on the trunk or of trunk movements on the legs; all such movements, however, being directed towards developing the abdominal and back muscles so essential for efficiency in the upright posture. While lying quietly the infant imitates the correct movements of inspiration and expiration (basis of exercise No. 1); when placed on its back the new-born child kicks and performs leg movements on the trunk (basis of exercise No. 4). Later it begins to try to sit up (basis of exercise No. 2), then it begins to try and turn over to get on to its hands and knees (basis of exercise No. 5), performing also in the endeavour various movements on which exercises No. 6–8 are founded. Finally, having assumed the upright posture, it acquires strength of leg and bodily coördination in the upright posture (exercise No. 10). Exercise No. 9 is included especially as an exercise for massage of the abdominal organs. There is also a psychological consideration in the order in which the exercises are arranged. To many people it is a great mental effort to jump straight from bed on a cold morning and start performing physical contortions. These exercises start by inducing the correct movements of respiration while still lying in bed covered by the bed-clothes. In themselves these movements are the waking-up process, but they are followed by two exercises in which the bed-clothes are rolled back to below the waist and then by one in which the bed-clothes are completely removed. Having proceeded thus far, the process of getting up and continuing the exercises becomes considerably less of an effort, since the respiratory and circulatory mechanisms are already working vigorously, and the mind is now thoroughly awake. Especially important is the realisation that these exercises are more or less "go as you please" exercises. Although for exercises 1–8 five times for each is the number laid down, this number need not be attempted at first, especially if the exercises be employed for people who are not in a good condition of health. When employed for such cases also, it is advisable for the subject to get out of bed and perform a number of respiratory and abdominal movements (exercise No. 1) while sitting on the side of the bed before assuming the vertical posture. When a certain degree of proficiency is obtained the number of the exercises is not increased, but the length of time over each respiratory process and movement is increased, all inspirations and expirations being more slowly and forcibly made.

It is sometimes stated that it is harmful to perform exercises with the breath held. There is, so far as I am aware, no real evidence for this statement. The young infant almost invariably performs its first muscular efforts with the breath held and then pants afterwards. It is conceded that it is desirable to teach subjects to acquire rhythmic coördinated breathing and to overcome, in certain circumstances, the tendency reflexly to hold the breath when engaged in acts requiring attention. For example, it is desirable that an airman using his machine-gun at great altitudes should continue to breathe as normally as possible and not to hold his breath in the rarefied atmosphere. But this is different from stating that any physical-training exercise which impedes the breathing is harmful. The absurdity of the position is seen when it is realised that a man who is told not to hold his breath or to impede his breathing (because it is harmful) while he is bending his head backwards and forwards on his trunk, may within a few minutes be practising for a 100 yards race in which the breath is (if possible) held for 10 seconds or more, while most violent muscular effort is performed. In certain sports and games, particularly in Rugby football, boxing, and under-water swimming, much muscular

effort is performed with the breath held, and experience has shown that such individuals make particularly efficient fliers in the rare air of high altitudes. In my opinion it is decidedly beneficial for an individual to accustom himself to the performance of muscular work with the breath held; he is then more likely to remain efficient in times of physical stress.

As supporting in some measure my views in regard to physical exercises I quote from an article by the late Sir Hermann Weber, written at the age of 83, in regard to his method of using exercise for the prolongation of life.

"I have mostly commenced with moderately deep inspirations and expirations, continued during three to five minutes once or twice a day, and have gradually increased the exercises to ten minutes or one-quarter of an hour. The depth of each inspiration and expiration and the duration of holding the breath are likewise to be only gradually increased. At the beginning one-quarter of a minute for every inspiration or expiration ought to be sufficient. If this is well borne, each act may gradually be prolonged in duration so that in the majority of cases each inspiration and each expiration may be brought up to a minute. All the movements are to be made slowly, not rapidly. I usually advise to inspire in an upright position, with raised arms and closed mouth, to bend down the body during the expiration so that the fingers touch the ground or the toes. By degrees one can do several up-and-down movements during every inspiration and bend and raise the body several times during the expiration. By this alternate bending and raising of the body we can gently strengthen the lumbar muscles, and through this successfully combat the tendency to lumbago.

"Another useful combination with the respiratory exercises is the turning of the body around the axis of the spinal column alternately, with deep inspirations from left to right and with expirations from right to left, the arms being half raised. By this movement we bring into action some of the muscles of the spine, which are apt to be only imperfectly used by most persons in advanced years, and the stiffness of the neck and spine and the tendency to stooping so common in old persons can be to some degree corrected by this kind of movement. If commenced in good time and practised regularly and thoroughly, swinging the arms around the shoulder-joint is likewise useful, and other combinations with muscle and joint movements will occur, but they should have accustomed themselves to these respiratory movements. The latter ought always to have our principal attention since to them the beneficial effect on the heart and the lungs is mainly due. In addition to the influence on the circulation, the respiratory movements keep up the nutrition and efficiency of the lungs, which undergo in old age a kind of atrophy. The walls of the smallest divisions and air-cells become thinner, and a kind of senile emphysema is developed which by this exercise is to some degree prevented. Another important influence consists in maintaining the elasticity of the chest walls, which are apt to become stiff in old age and thus to interfere with free movements of the lungs and pleura. If, for some reason, the erect position should be inconvenient, respiratory movements can be made also in the horizontal and sitting positions."

In addition to these exercises, taken regularly every morning, Sir Hermann Weber advised a walk lasting from one-half to three hours, part to be taken in the morning and part later in the day, and once a week he recommended a day or more prolonged exercise, and a holiday once or twice a year spent in a walking or climbing tour of three or four weeks.

DEMONSTRATION.

I will now ask the instructor present to demonstrate the ten exercises, directions for which I have laid down as follows. It is to be especially noted that in all these exercises it is of great importance that the process of inspiration is initiated by the contraction of the diaphragm, protruding the "pit" of the abdomen together with a movement of the lower ribs, full inspiration being attained by a wave-like movement spreading from the lower ribs to the upper part of the chest. On no account must the upper part of the chest be expanded first. Expiration is accomplished by the contraction of the muscles of the abdomen and of the lower part of the chest.

Physical Efficiency Exercises.

In Bed.

1. (*a*) Lying flat, inhale to the fullest extent, at the same time raising the hands above the head in a natural "stretching" motion. (*b*) Exhale to the utmost extent, using the abdominal muscles forcibly to press out as much air as possible from the lungs, at the same time carrying the arms to the sides. Repeat five times.

2. Using the weight of the bedclothes turned down to the hips as a means of keeping the legs down, raise the body from the hips and bend forward as far as possible, at the same time breathing out forcibly to the fullest extent, then slowly return to the lying posture, inhaling deeply meanwhile. Repeat five times.

3. (*a*) Using the bedclothes as before, from the lying position raise the trunk, with the hands by the sides, through an angle of 45°, then twist round the trunk upon the hips, keeping the legs flat and endeavour to make the forehead touch the bed, meanwhile exhaling forcibly as far as possible. (*b*) By a reverse movement assume the lying position, inhaling deeply meanwhile. Repeat five times to right and left sides.

4. (*a*) From the lying position, flat on the bed, with the hands clasped behind the head, raise the legs from the hips, carrying them as far over the head as possible, inhaling as deeply as possible meanwhile. (*b*) Lower the legs slowly to the fullest extent, meanwhile exhaling deeply and forcibly. Repeat five times.

Out of Bed.

5. (*a*) By a kind of "stretching" movement raise the arms slowly and strongly forward and upward, then lower them sideways until they are in line with the shoulders which are well thrown back, meanwhile inhaling to the fullest extent. Brace up the muscles of the abdomen and all accessory muscles of inspiration. (*b*) Keeping the body as upright as possible, carry the arms forward until they overlap and hold sides of trunk; expire meanwhile to the utmost extent, working specially the lower chest and abdominal muscles. When in the position of full expiration brace up all muscles of lower chest and abdominal wall. Repeat five times.

6. (*a*) With the feet about 18 in. apart † (or other comfortable distance) carry the arms forward, upward, and backward, inhaling meanwhile to the fullest extent. (*b*) Bend trunk forward and full downward, carrying the arms between the legs to touch the ground with the fingers as far as possible behind the feet, meanwhile exhaling to the fullest extent. Repeat five times.

7. With the feet about 18 in. apart † and arms raised sideways and in line with the shoulders, bend the trunk to the left (right) until the left (right) hand touches or nearly touches the ground, keeping legs straight, meanwhile breathing naturally or holding the breath. Repeat five times to each side.

8. (*a*) With the feet about 18 in. apart † carry the arms forward, upward, and backward, inhaling meanwhile to the fullest extent. (*b*) Turn and at the same time bend the trunk to the left (right), and touch the ground on the outside of the left (right) foot, expiring meanwhile to the fullest extent. (*c*) Stretch trunk upward to upright position, inhaling meanwhile to full extent. Repeat five times to each side.

9. Inhale as fully as possible, then exhale sharply to the fullest extent, and, with the chest and abdominal wall held in position of expiration, work all the abdominal muscles, alternately forcibly contracting and relaxing. Repeat two or three times.

10. Stationary running (often known as the 100 up); shadow skipping; shadow boxing; rhythmic balancing exercises; jumping or any other form of exercise preferred by the subject, until out of breath.

The exercises may be followed by a tepid or cold bath or a rub down with a hard towel wetted with warm or cold water according to the taste of the individual.

In my experience these exercises have given good results; as I have already stated, I believe that they will be found useful in preserving the physical efficiency of those engaged in sedentary occupations and will enable them to indulge in open-air exercise without undue fatigue. They are in no way designed to supplant recreational exercise nor to replace more elaborate systems of physical training. In regard to the latter, it is believed that they will give the correct circulatory and respiratory efficiency which at present may or may not be obtained.

In conclusion, I wish also to thank my friends, Sir Arthur Keith and Dr. Leonard Hill, for the great help and encouragement they have always given me both in connexion with the present work and also in the past. I also wish to place on record my thanks to the Medical Research Council, in whose employ I

† These distances can be gradually decreased as proficiency is attained.

was at the time that most of this work was done, and particularly to Sir Walter Fletcher for the interest he has shown in the progress of this investigation. My thanks are also due to Lieut.-Colonel A. P. Bowdler, Squadron-Leader E. G. Clarke, and particularly to Flight-Lieut. G. S. Marshall, for help in the preparation of these lectures. Finally, I wish to acknowledge the helpful consideration I have always received from my brother officers of the Royal Air Force, both past and present, and to express my admiration for the courage, skill, and bodily endurance which they so persistently displayed throughout the late war.

Hunterian Lecture

ON

MUCOCELE AND PYOCELE OF THE NASAL ACCESSORY SINUSES.

Delivered before the Royal College of Surgeons of England

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INSTANCES of the condition with which I propose to deal have been recorded from time to time under various designations, but only within recent years has an attempt been made to systematise our knowledge of the subject and to give it its proper place as an explicable surgical occurrence. Logan Turner in this country, and Gerber in Germany, were chiefly responsible for elucidating the condition and placing it upon a scientific basis, and it is only the comparative neglect of their work that has impressed upon me the advisability of reconsidering the subject in the light of recent knowledge and experience.

MORBID ANATOMY.

By the term mucocele of a sinus is meant the accumulation and retention within it of a mucous secretion owing to obstruction of its outlet with thinning and possible distension of one or more of the walls of the sinus. When the contents of the cavity are purulent in character the condition is referred to as a suppurating mucocele or pyocele.

The occurrence of mucoceles is not by any means uncommon, and records are to be found of a considerable number of cases, but often the true condition does not seem to have been appreciated; for instance, many cases recorded as bone cysts in the region of the orbit or accessory sinuses would appear to have been true mucoceles. Any of the accessory sinuses may be affected, but I have not met with a case in which the sphenoidal sinus was affected, and it is difficult to find satisfactorily recorded cases. I have not met with a case of mucocele of the maxillary antrum in my own practice, and a study of recorded cases leaves some doubt in the mind as to whether dentigerous or other cysts connected with the teeth had not obliterated the antrum and been mistaken for it; but the occurrence of mucocele of either cavity, though apparently extremely rare, is of course possible.

My own cases, which are 14 in number, have all been connected with the frontal sinus and the anterior part of the ethmoid labyrinth; other recorded cases also seem to show that this may be regarded as by far the commonest situation. In the ethmoid group of my series I do not include those cases where an abnormal air cell in the anterior end of the middle turbinate has become distended by retained mucus and given rise to purely intranasal manifestations. It is true that the middle turbinate is merely a folded-over portion of the ethmoid labyrinth, occasionally containing an accessory air cell the ostium of which may get blocked, but these cases (of which I have seen three) should, I think, be placed in a separate category.

When a mucocele of the frontal sinus occurs the increasing pressure of retained fluid makes itself felt on the bony walls of the sinus, and the thinnest wall, as would naturally be expected, most usually gives way. The inferior wall of the frontal sinus is the thinnest; it is most usual to find a swelling appearing in the roof of the orbit, either in the region just behind the trochlear fossa or somewhat external to it. Any of the walls, however, may be affected; in three of my cases the anterior wall was absorbed, whilst in three others the posterior wall was absorbed and a considerable area of the dura mater consequently exposed. Occasionally more than one wall may be involved; I have one case in which the floor and anterior wall of the right frontal sinus and the anterior wall of the left frontal sinus were involved, the partition between the two sinuses being absent or having been absorbed.

In the ethmoid labyrinth such a varied anatomical formation is met with that it is not easy to say which wall is most commonly affected. Usually the ethmoid is made up of ten or a dozen cells, and when a mucocele arises in this type of labyrinth the partitions between the cells are the first to disappear owing to pressure atrophy and the complicated labyrinth thus converted into one large cavity before the anterior wall shows any sign of absorption. Occasionally ethmoids are met with which normally consist of two or three large cells only, but it would appear that this type of ethmoid is not so likely to be affected.

CLINICAL FEATURES.

The main clinical features of both frontal and ethmoidal mucoceles are orbital in character, so that cases very often come under the notice of the ophthalmic surgeon in the first instance. A swelling is noticed at the inner and upper angle of the orbit. This may feel hard and bony, or the bone may be so thinned that it gives a parchment-like sensation to the touch; in other cases the swelling is definitely elastic or fluctuating, a portion of the bony wall having been absorbed. When this occurs the edges of the gap in the bone can usually be felt, and it is sometimes observed that the bone in this situation is thicker than normal from a deposit of new bone.

There is no tenderness or pain on manipulation, and the skin is unaltered in appearance and freely moveable over the swelling. Pressure on the swelling does not alter its size. The swelling may remain practically stationary for years, but usually when the bone has been absorbed the condition progresses more rapidly and symptoms of pressure on the orbital contents begin to appear. The eyeball is usually displaced downwards and outwards, sometimes forwards as well; the latter occurrence taking place when the mucocele has pushed through the floor of the frontal sinus or the os planum of the ethmoid somewhat farther back in the orbit than usual. As the globe of the eye is displaced diplopia may appear, the images usually being seen one above the other. In some cases a high degree of displacement may occur without any diplopia, whilst in other cases it is one of the earliest signs. The movements of the eyeball are not usually affected.

When the mucocele is purely ethmoidal the swelling may be somewhat lower down, and as it pushes forward may involve the lacrymal apparatus. This may lead to mistakes in diagnosis and a wrong form of treatment. In three of my cases this occurred. I will mention one as an instance. A boy of 12 was playing football at school and received a severe blow in the left eye from another boy's elbow. An extensive black eye resulted which got better in 10 days. Four months later a swelling appeared in the region of the lacrymal sac; in a few weeks' time this was incised and some clear fluid evacuated. He came home and a month later an operation for removal of the lacrymal sac was decided upon and undertaken. The swelling reappeared and five weeks later a second

operation was performed and a third one four weeks after that. When seen it was clear that there was a slight swelling rather above the lacrymal sac, and this gave the clue to the diagnosis, and on operation proved to be a mucocele involving the anterior part of the ethmoid.

Several cases are recorded where epiphora has been the first symptom noticed; this was so in one of my cases. It may be a useful early sign, but can occur in other tumours about this region; I recall a case in which epiphora and then dacryocystitis were said to have been for months the only symptoms of a patient who eventually died of sarcoma of the superior maxilla.

A thorough intranasal examination is naturally undertaken in all these cases, but is usually of little assistance in the diagnosis. In only two of my cases was anything abnormal detected. In both cases nasal polypi were found. In one case, a male aged 85, they were entirely unsuspected and had not given rise to any trouble. In the other case the patient said that he had had them for 14 years and had had them removed on many occasions. Other observers have recorded cases in which the outer wall of the nose was bulged inwards by the mucocele and on being punctured the size of the external swelling was considerably reduced. It is somewhat remarkable that this occurrence is not more common; it did not occur in any of my cases.

ÆTIOLOGY AND PATHOGENESIS.

The onset of these cases is often so gradual and the course so slow and painless that it is very difficult to assign a definite cause in an individual case, still less to point to any ætiological factor that is common to them all.

I will not attempt to deal with the various theories that have been brought forward, as it seems to me that for the production of the condition partial or complete blocking of the natural ostium must occur and any attempted explanation must have reference to this occurrence. There are certainly two ways in which this may be brought about. Logan Turner thinks that "one may be justified in regarding a pre-existing catarrh as the cause of the chronic inflammatory changes which take place in the affected sinuses. In consequence of the catarrh the ostium becomes temporarily or permanently obstructed and there is an accumulation of the mucous contents of the cavity and gradual thinning and absorption of one or more of its bony walls." This is certainly a good explanation of some cases, even though it is not possible to establish definite evidence of the initial catarrh, and one knows that absence of any abnormal nasal discharge is a very characteristic feature of the condition when well established. The occurrence of an injury has been suggested by Killian and others as a possible explanation and sporadic cases brought forward, but in Logan Turner's series of ten cases there is no instance of it, and he is inclined to discount it. Gerber is also very sceptical.

In my series I have at least five cases in which it can, I think, be said that a severe injury was the exciting cause. The case of the small boy who got a severe black eye at football four months before the onset of the external swelling has been mentioned, and I will briefly describe some other cases.

A lieutenant in the Air Force, whilst getting into his aeroplane, was struck in the eye by a stone thrown up by an H.E. shell. He had a black eye; it ached a good deal and never got quite right. The eye began to water, and four months later he noticed a swelling at the right inner canthus. This increased but he had no diplopia and went on flying for a year; he was then sent to England for an operation, but nothing was done, and he returned to France. Six months later double vision began and he came to England and under my care. I operated on him and found a large mucocele of the frontal sinus and ethmoidal cells. He got quite well and his diplopia disappeared in three weeks.

Another officer having been hit in the left eye by a piece of shell, went into hospital, but nothing was done. He had no trouble with his eye for nearly three years, and then noticed a swelling near the left inner canthus. He was sent home a few months afterwards with a typical mucocele of the left ethmoid, upon which I operated.

The third case I will mention is a most remarkable one. A private soldier was bending down to pick up a bucket when something hit the ground and rebounded into his eye, causing a lacerated wound near the inner canthus; after ten days in hospital he was all right and returned to duty. Several months afterwards he noticed a swelling near the left inner canthus, and later was troubled with diplopia. Some months afterwards he came to England and was under my care. He then had a mucocele which I proposed to operate upon, and on having the usual X ray photograph of the sinuses taken we were very surprised to find that he had a large piece of metal in his sphenoidal air sinus just below the pituitary fossa. It was then clear that the piece of metal had struck the floor of the frontal sinus, ploughed through the ethmoid, and come to rest in the sphenoidal sinus. I did the radical operation on the mucocele, but thought that it would be meddlesome surgery to interfere with the piece of metal. It is still in the same place and has caused no symptoms except occasional headaches during the last three years.

Injury can, I think, undoubtedly be accepted as a cause of the condition, so that we have therefore at least two methods of causation—one inflammatory, the other traumatic. But it may be wondered why everyone who gets a nasal catarrh or sustains a severe black eye does not develop a mucocele.

My own belief is that the condition depends largely on the ethmoid, only arising when the ethmoid is of a definite anatomical configuration—that is to say, when some of the anterior cells come much further forward than usual and are found in front of the fronto-nasal duct, even in front of the lacrymal bone, and bulge into the floor of the frontal sinus. When this condition is present and the fronto-nasal duct much narrowed by it, it would take but a small amount of plastic inflammation to block it, whilst a blow near the inner canthus would readily crush this cell into the fronto-nasal duct or obliterate its own ostium. Normally, the anterior ethmoidal cells lie well behind the ascending process of the superior maxilla and are protected by it, but an unusually anterior one would be correspondingly more vulnerable.

While this seems to me a likely explanation for the majority of cases, there will always remain some few in which another cause will be revealed at the time of operation. I refer to those cases in which an osteoma growing in an anterior ethmoidal cell or near the fronto-nasal duct may gradually cause blockage.

Luc and Laurens have each recorded a case of this, whilst only the other day, as I was operating by the external route on an ethmoid I came upon a very anterior cell almost completely filled by an osteoma, which might easily have caused trouble later on.

SYMPTOMS.

One of the chief characteristics of the condition is the entire absence of symptoms until an external swelling appears. Then symptoms may arise which lead the patient to seek advice from an ophthalmic surgeon, either on account of the alteration in vision due to displacement of the globe or on account of some affection of the lacrymal apparatus.

Headache is occasionally complained of, and may be a simple "brow ague" or a generalised ache. The bursting headache usually associated with increased intracranial pressure is seldom if ever present. Only three of my patients complained of headache; in two of them the posterior wall of the sinus was found to be absent at the time of operation; the dura being exposed, was naturally somewhat pressed on by the contents of the mucocele. It is, perhaps, surprising that the headaches were not more severe in intensity, but the frontal lobes of the brain can put up with a good deal of slow compression without the rise of any untoward symptoms.

Differential Diagnosis.—The recognition of the condition may be quite easy if we have to do with a straightforward case that presents the classical signs and pressure symptoms. Some confusion may occur if an acute inflammatory process is grafted on to the previous long-standing condition and the clinical

picture is markedly altered. Such occurrences do arise, as the ostium frontale and the ostium ethmoidale, though closed enough to bring about the retention of the contents of the sinus, cannot always prevent the spread of any infective process from the nose. I have only one instance in my series of such an occurrence.

A soldier in the Irish Guards had noticed for many years before the war a swelling in the situation that we regard as typical. He had not had any inconvenience until 1916, when the swelling became larger and his eye was displaced outwards for nearly half an inch. He was sent home to the depôt; some weeks afterwards, when he had a severe cold, he complained of tenderness of the swelling, with some redness of the skin. It was thought to be a lacrymal abscess, and incised, but the ophthalmic specialist was considerably surprised and disconcerted to find that his probe went backwards through the swelling for a distance of nearly three inches. The patient then came under my care and a radical operation revealed a large pyocele that had converted the whole ethmoidal labyrinth into one large cavity. No doubt, this had become infected from the nose and given rise to the acute symptoms.

Cystic dilatation of the lacrymal sac may be confused with ethmoidal mucocele, but in the former condition firm pressure will usually express some of the fluid through the nasal duct into the nose or through the punctum lacrymale into the inner canthus.

Much more difficulty is presented by tumours of the frontal sinus and of the orbit, more especially osteomata and fibro-sarcoma. I have been able to find records of nearly 200 cases of osteoma in the literature. They often grow from the under aspect of the supra-orbital margin and push forwards more externally in the orbit than the mucocele. Their solidity compared with the comparative compressibility of the mucocele is a diagnostic point, whilst X ray examination may show the tumour to be very dense. My experience is that X ray examinations in mucoceles are of little if any help in diagnosis.

Osteomata of the frontal sinus may not be so obvious as those of the orbit and may even give rise to acute symptoms; a case was recorded a year or two ago in which a Bavarian soldier went sick with headache, rise of temperature, and swelling of the left upper lid. At the operation a large osteoma was found to be occupying the whole of the left frontal sinus and ethmoid labyrinth.

Malignant tumours usually present less difficulty, although several cases recorded as mucoceles turned out to be malignant growths. Dermoid cysts usually occur at the outer canthus, but I had a case a few years ago of a boy of 10 in which one was present at the right inner canthus. There was, however, no displacement of the eye. Meningoceles have also been described as occurring in this situation, whilst suppurating sebaceous cysts have occasionally caused difficulties in diagnosis.

Duration.—It is difficult to say how long the condition has lasted in any individual unless the occurrence of an accident fixes the probable date of onset. From a study of recorded cases one gets the impression that a large number are of many years' standing; cases are mentioned where 20 years has been given as the probable duration, whilst in others a few weeks is regarded as the probable time.

In my series the group of five traumatic cases gives an idea, in them at least, of the time elapsing between the accident and the first onset of symptoms or of external swelling. In one case of a man who ran into the edge of a heavy oak door and sustained a severe black eye an external swelling appeared in the typical situation about a year afterwards, but caused him no trouble, and it was not until seven years after that that the swelling got larger and he began to notice occasional diplopia and so came under my observation. Of the other traumatic cases three years was the interval between a blow from a piece of shell and the noticing of the external swelling.

In the other three about four months was the time given. In one of these, however, that of the Air Force officer, whom I have mentioned previously, the symptoms were simply watering of the eye, and he went on flying for another year. Very little useful information results from an examination of the other cases, and as there is nothing to date the onset, one seldom gets a history of more than six or eight months.

Age.—The age of the patient is not of much importance, but in this connexion I should like to point out the fallacy of drawing deductions from a small series of cases like mine. Of the non-traumatic cases the oldest was 85 and the youngest 41, whilst the average of the others was over 60, so that one might be inclined to say that the condition was more prone to occur in elderly people. From Logan Turner's series of 10 cases, however, the impression that one would form would be that the affection was one of early adult life. Thus, in this instance, the two series of cases are a useful corrective to each other.

Similarly, as regards the *sinus affected*, my cases show 10 cases where the frontal sinus was affected, 2 where the frontal sinus and the ethmoid were involved, and only 3 purely ethmoidal cases, whereas, a review of recorded cases leads one to the belief that purely ethmoidal cases are much the more common. The lining membrane of mucoceles has been investigated by Onodi and other observers, and detailed accounts published of the microscopical appearances. These serve to show that changes of a chronic inflammatory nature are present both in the lining membrane and in the underlying bone, the latter undergoing erosion and absorption. Where the bone was in process of erosion, large bone cells of the nature of osteoclasts were seen.

Contents of the cavity vary very much in the cases. It is most usual to find it filled with a thick glairy opalescent and almost gelatinous fluid, but the colour and consistence may vary considerably. In those cases where an infection had probably occurred at some time the pus was usually thick and yellow. In all my cases where cultures were made from pus the latter was found to be sterile.

TREATMENT.

Treatment should, I think, consist in exploration of the swelling through an external incision, and then establishment of free intranasal drainage.

The usual eyebrow incision is made, the periosteum with the pulley of the superior oblique is stripped up, and the orbital contents retracted outwards. One can then estimate the extent of the condition and plan the future steps of the operation after the thin bony wall in the upper and inner angle has been removed and the contents of the mucocele evacuated. As much of the bony floor of the sinus as is thought advisable should be removed and a large opening made through the lateral mass of the ethmoid into the nose. The lining membrane of the cavity should not be disturbed except where it has been removed with the bony wall. A large rubber drainage-tube should be passed from the sinus into the nose and sewn to the ala. The external incision should be completely sutured. The drainage-tube may be left in the nose for ten days. If it gets blocked a probe should be passed up it and after the third day some warm lotion may occasionally be syringed up it. No further treatment is required. By making a very large opening into the nose and by removing the floor of the mucocele one practically makes the mucocele part of the roof of the nose. The fact that a considerable area of dura mater may be exposed posteriorly is of no moment, as the rest of the dura is already shut off and the exposed portion considerably thickened.

MANCHESTER ROYAL INFIRMARY.—The post-graduate lectures and demonstrations on medical, surgical, and special subjects given by the honorary staff were resumed this year on Tuesday, Oct. 4th, when Mr. J. W. Smith lectured on Duodenal Atony. Lectures will be held each week (with the exception of Tuesdays, Dec. 27th, Jan. 3rd, April 18th) till May 2nd, 1922, and will be announced in our Medical Diary.

NUTRITION IN VIENNA.

II.

BY MADGE R. GRIBBON, M.A.,
AND
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IN the present paper* we deal with the condition of (1) the middle classes in Vienna; and (2) the rural classes in the neighbourhood of that city.

Condition of the Middle Classes in Towns.

Middle-class families have suffered more severely than those of the working classes from the adverse economic conditions because the increase in their incomes, proportionately to the increased cost of living, has been smaller and because pride has prevented them from seeking or accepting charitable help. They have been reduced to a state of penury which contrasts cruelly with their previous condition of comparative affluence. It was difficult to secure consent to a study of their conditions of life and to gain coöperation, but when this had been achieved they gave most intelligent help and rendered accuracy of result much more easy to attain than in the case of the labouring classes. They kept their ration ready to be weighed on the visit of the investigator and were scrupulously careful to note any small additions to the food such as a gift to one of the children of an extra piece of chocolate. The investigator weighed the younger children on her own balance and measured them, while she obtained the weights and heights of the others at their schools. The families were not selected but were taken as their names were given. Living in good homes—because unable to get other accommodation—the children are often forced to be absent from school for want of clothing and in some cases they are sleeping three to four in a bed as the other beds had to be sold to meet expenses. Under the present régime no room is allowed to remain unoccupied and every family, if not using all the rooms, is bound to take in lodgers. The majority of the rooms are small, on an average from 10 to 14 feet square, and such a room may be occupied by three or four people. Though the main buildings may be well ventilated, the rooms seldom are. The Viennese rarely open windows and the children are kept much indoors. Rents have not risen to any great extent, but few people are able to mòve from one house to another. The incomes often do not cover the weekly expenses and too frequently at each visit another article of furniture was seen to have disappeared. Blankets are made into clothes and one garment is made to do for the whole family.

Table I. gives a summary of the results of these studies.

In the families marked with an asterisk in the tables one or more of the children received a meal at school from the American Mission. The equivalent for this is stated in nems and in allowing for it the composition is taken as the same as the Friends' ration, containing 27 g. protein and 45 g. fat to 1000 calories. Two of the families with rickets—41 and 44—give results so divergent from the others that probably they should have been excluded from the series. In 41 it is noted that the mother—a widow—gets much help from her parents and could give little information. Forty-four was a country family who used some of their own products. But, since these cancel one another, it was considered better to leave them. Among the non-rachitic families several require further consideration. In 5 it is noted that the food was chiefly bread and the children were undernourished. In 20 there is no special note except that they had been selling furniture and that it was impossible to ascertain all the household expenses. For 27 it is noted that the family had a very precarious living, one week much better than the other. In 29 more than the whole income goes for food and the same is the case with 46.

In March, 1921, an attempt was made to study the diets of 10 middle-class families, including the families of three university professors at Graz and Salzburg. Although the average income exceeded that of the Viennese families, being 1435 as against 1140 kronen,

TABLE I.—*Investigation of Middle-Class Families in Vienna.* (*Calculated as per man per day.*)

A.—WITH RICKETS (14).

No.	Persons in family. Adult. M.	Adult. F.	Under 14.	Weekly income in kronen.	Percentage of income spent on food.	Total weekly expenditure.	Particulars of diet per man per day. Calories.	Protein g.	Fat g.
2	1	1	2	1145	48·1	946·5	2094	79·3	31·2
4*	1	1	3	1500	40·0	1242	1964	54·8	49·0
8	1	1	2	1000	79·2	1016	2450	75·3	58·3
12*	1	1	2	1200	37·2	1166	1984	62·8	60·0
13	1	1	1	800	62·7	752	2074	72·6	29·6
14*	1	1	4	1400	44·2	1208	1694	49·4	56·2
17*	3	1	3	2500	43·6	2089	2541	70·9	64·8
21*	1	1	2	900	61·1	750	1221	45·0	20·8
22	1	1	2	800	93·2	895	2134	61·6	56·1
25*	1	1	1	890	53·3	674	2144	54·0	84·0
28	1	1	1	750	77·8	934	1417	35·6	37·6
41	–	1	–	750	49·4	620	3897	131·0	70·0
44	1	1	2	900	—	—	986	28·0	33·0
50	1	1	2	1000	96·4	1063·5	2090	45·8	52·0
Average			..	1109	60·5	—	2049·3	61·8	50·2

Father's occupation.—(2) Professor, (4) dentist, (8) town clerk, (12) clerk, (13) teacher, (14) musician, (17) wood factory, (21) ivory polisher, (22) shoe factory, (25) hospital clerk, (28) doctor, (41) [clerk], (44) clerk, (50) vineyards.

[Square brackets indicate decease.]

B.—WITHOUT RICKETS (25).

1*	1	1	1	522	77·3	948·5	2559	83·5	33·6
3*	1	1	2	600	117·2	813	2336	62·9	64·2
5	1	1	3	320	108·6	347·5	1495	44·3	28·2
6	1	1	1	1120	45·8	1216	2267	68·1	41·6
7	1	2	1	1500	44·8	1172	2123	56·8	41·2
9	1	1	2	2500	39·7	2442	2588	57·6	87·7
10*	1	1	2	1750	50·5	1680	2193	63·9	52·0
11*	1	2	4	3000	28·7	2387	2813	79·0	79·5
15	1	1	1	1000	59·1	1151	2649	72·7	104·2
16*	1	1	2	850	69·6	—	2230	56·0	47·4
18	–	1	1	1000	38·0	930	2921	86·0	44·6
19	–	1	2	995	59·6	350	2685	74·4	64·4
20*	1	2	2	1000	42·4	—	1017	30·4	29·3
23*	–	1	2	800	95·4	970·5	1637	34·8	100·0
24	2	1	4	3000	38·2	2835	2167	61·1	49·1
26	1	1	1	1550	34·1	1128	2088	88·1	75·6
27	1	1	1	700	87·6	700	1399	41·9	51·6
29	1	1	1	800	102·4	919·5	1286	43·8	13·2
30	1	1	3	1000	62·5	924·5	1722	49·5	49·4
42*	1	1	1	750	74·2	756	1524	43·0	32·5
45*	–	1	1	1000	38·0	952	1704	44·9	61·2
46*	1	1	2	400	115·8	563·5	1437	33·8	42·0
47	–	1	1	700	90·8	736	2595	78·7	37·3
48*	1	1	2	560	50·4	532	1736	48·4	44·6
49*	–	2	4	1500	36·6	1369	2166	53·8	64·0
Average			..	1156·7	64·3	—	2053·5	58·3	53·5

Father's occupation.—(1) Librarian, (3) clerk, (5) ivory polisher, (6) teacher, (7, 9) doctor, (10) burgomaster, (11) librarian, (15) clerk, (16) musician, (18) [clerk], (19) [asst. editor], (20) teacher, (24) stationer's shop, (26) horse-stables, (27) musician, (29) in post office, (30) accountant, (42) clerk, (45) [baker], (46) retired officer, (47) [retired officer], (48) retired officer, (49) [town clerk].

the food consumed yielded on an average only 1290 calories with a minimum of 776 and a maximum of 2023 calories. It is difficult to accept such figures and the suspicion is aroused that we failed to secure a complete record of the food actually consumed. We therefore do not publish a table of the results.

Nutrition of the Children.

While probably the weight to age ratio fails to give a thoroughly satisfactory representation of the nutrition of the children, the weight to height ratio seems also unsatisfactory in conditions where stunting of height as well as decreased gain of weight may have

* Section I. consisted of an account of a study of the diets and state of nutrition of the working classes in Vienna during the past year and appeared in THE LANCET, 1921, i., 474.

been a consequence of under nutrition. As the former comparison was adopted in the previous investigation it has been adhered to in the present paper (Table II.).

TABLE II.—*Average Height and Weight of Viennese Children at Different Ages, compared with British Anthropometric Standard Average.*

Middle-class, Town, Sexes Combined.

(A) = Per cent. under Anthropometric Average.

Age in years.	No. of children.	Weight. Pounds.	Weight. (A)	No. of children.	Height. Inches.	Height. (A)
1–2 ..	6	18·8	8·7	—	—	—
2–3 ..	10	20·5	27·3	9	26·2	20·8
3–4 ..	14	26·4	19·1	14	33·1	9·4
4–5 ..	8	29·5	18·8	8	33·4	12·9
5–6 ..	9	33·7	14·1	9	37·5	7·8
6–7 ..	5	34·8	19·2	5	38·1	12·4
7–8 ..	9	41·4	14·7	9	40·8	9·6
8–9 ..	15	45·2	15·3	14	45·6	2·7
9–10 ..	5	49·6	16·2	5	48·1	2·8
10–11 ..	8	54·8	15·2	8	49·8	3·1
11–12 ..	5	62·4	11·1	5	51·7	1·1
12–13 ..	4	58·5	23·3	4	52·4	4·9
13–14 ..	2	72·3	17·2	2	55·5	3·8

It will be seen from this and from Table VI. that under 2 years of age the nutrition of the children of the middle-class families as indicated by the percentages of weight under the Anthropometric Standard is better than that of the labouring classes—8·7 to 14·8 below. It is also slightly better between 3 and 4 years—22 against 26·5. From 4 to 9 it becomes worse—16·0 to 13·2, and from 10 to 14 it is even more distinctly worse—21·5 to 15·5.

Condition of Families in the Country.

The same accuracy of results cannot be claimed for the studies of the rural families as for those in town, because it was impossible to visit them every day, and the statement of the mother as to the amount of food consumed had to be accepted in many instances. The families visited live within a radius of 45 kilometres of Vienna. The country is one of hills covered with woods of every description. Most of the families live in small villages or in little shepherds' huts right away up in the hills. The houses are mostly small, and in many cases the animals live with the family. In the villages the floors of the houses are mostly below the ground level. The children are out a great deal, both in summer and winter. The families were not selected. The names were given by the nurses of the welfare centres as children who did not attend there. They were not families who had received rations from the Friends' Relief Mission, though those who attended school received a meal from the American Relief Administration. This is allowed for in our tables.

The condition of these families varied greatly, some being fairly well-to-do, some being very poor, some depending entirely upon food purchased, others having some produce from their land. In many cases the food-supply varied greatly from week to week and at different seasons. Many had garden produce and goats' milk and butter in summer, but these were not available in March when the studies were made. Probably in some cases all the food consumed has not been noted, but it is of interest that the average energy value of the diets is slightly higher than that of the urban working classes, that the average protein content is rather higher, and that the fat content is very markedly higher on account of the greater use of milk and butter (Table III.).

Family 17 is described as living mainly on bread made at home with water and as keeping poultry. Family 39 use home-made butter which accounts for the high intake of fat. About 40 it is noted that the diet varies greatly from week to week and that during some weeks they are starving. During the week of study they were having vegetables, beans, fish, bread, and flour. The data as regards two families living in the hills and of the family of a carter are so imperfect that they have been excluded.

Nature of Food.

The character of the food differed considerably in the two groups, as shown in Table IV., a larger proportion of country families using fresh milk and butter, a higher proportion of town families using margarine and lard.

TABLE III.—*Investigation of Country Families round Vienna. (Calculated as per man per day.)*

A.—WITH RICKETS (21).

No.	Persons in family. Adult. M.	Adult. F.	Under 14.	Weekly income in kronen.	Percentage of income spent on food.	Total weekly expenditure.	Particulars of diet per man per day. Calories.	Protein g.	Fat g.
1	1	1	2	689	89·4	—	2130	68·2	93·1
3	1	1	3	1200	—	—	1840	42·2	31·4
4	1	2	5	1000	—	—	2416	57·8	81·7
5	1	1	2	750	—	—	1941	58·6	38·0
6	1	1	1	550	—	—	1844	52·4	35·8
10•	3	1	4	1700	42·4	1007·20	2666	62·1	77·1
11•	1	2	7	1000	43·7	1101	1662	35·9	71·6
12	1	1	4	610	80·5	653	1830	48·9	23·1
14	1	1	3	700	73·5	568·90	1866	57·5	52·6
17•	1	1	4	650	63·2	495·70	4137	134·1	82·0
18•	1	2	4	1100	48·2	874	1409	40·5	42·2
24	1	1	3	500	52·6	—	1923	62·0	62·0
26•	1	1	4	1000	31·4	801	1518	51·0	45·5
27	1	1	2	—	—	—	1895	51·4	48·5
30	1	1	5	1100	75·7	1093·50	1957	53·8	40·3
34•	2	3	5	1000	80·5	995	2145	49·1	55·1
35	–	1	2	500	109·8	529	2429	64·8	45·3
38	1	1	3	800	62·4	795	2684	67·3	88·5
39	1	1	2	600	70·5	600	4056	69·6	95·3
41•	–	1	2	800	46·2	—	2774	83·3	49·0
43	1	1	2	600	—	—	2624	112·3	82·2
44•	2	1	5	1500	55·4	1255	1926	53·7	37·2
47•	1	1	3	990	76·4	956	2808	81·9	89·5
50	1	1	2	550	58·0	529	1822	58·5	27·2
Average ..				864·7	64·4	—	2262·1	63·3	58·2

Father's occupation.—(1) Plumber, (3) gardening, (4) land labourer, (5) carter, (6) road man, (10) builder, (11) railway man, (12) labourer in vineyards, (14) road cleaner, (17) vineyards, (18) tree feller, (24) casual worker, (26) timber worker, (30) woodcutter, (34) railway porter, (35) [carpenter], (38) road mender, (39) furniture factory, (41) [in factory], (43) casual worker, (44) shoemaker, (47) vineyards, (50) unemployed.

B.—WITHOUT RICKETS (23).

8	1	1	3	550	—	—	1795	53·1	31·5
9	1	2	1	1500	—	—	1876	53·1	31·8
13	1	1	1	1100	53·8	1012	1975	55·5	78·6
15	2	2	2	1000	45·5	1066	2146	68·2	23·1
16	1	1	2	600	34·3	473·50	2056	75·2	46·7
19•	–	1	2	450	91·3	485	3810	127·8	98·0
20	1	1	1	550	100·3	551·50	2480	80·7	52·2
21	1	1	1	550	53·1	505·30	2342	71·8	50·5
22	2	2	1	1200	—	—	2254	70·4	57·5
23	–	1	2	350	87·4	346	2564	87·0	37·3
25	1	1	4	600	123·6	800	2009	65·3	64·8
28	1	1	1	760	46·9	659·50	2101	69·1	39·3
29	1	1	3	1000	50·7	1003·50	2562	90·7	59·3
31	1	1	2	1100	23·9	919	2397	80·2	75·1
32	1	1	1	900	49·5	665	1400	43·4	35·3
36	2	1	2	700	61·7	600	1447	41·2	21·0
37•	1	1	2	1000	27·8	—	2414	61·8	68·8
40	1	1	2	1000	52·9	853	4078	178·4	60·7
42•	1	1	3	900	—	—	2324	58·8	33·4
45	1	1	2	750	72·3	724	2830	92·1	86·5
46	1	1	1	550	71·5	494	3091	85·5	118·2
48	1	1	1	684	81·3	681	2890	112·9	78·7
49•	1	1	3	1500	42·5	—	2377	83·3	69·5
Average ..				838·6	61·6	—	2400·8	78·5	57·3

Father's occupation.—(8) Land labourer, (9) farmer, (13) land labourer, (15) boots in hotel, (16) unemployed, (19) [woodcutter], (20) farm hand, (21) casual worker, (22) on farm, (23) [—], (25) blind, (28) boatman, (29) stapler, (31) land worker (casual), (32) coachman, (36) carpenter, (37) sweep, (40) steel factory, (42) shoe factory, (45) vineyards, (46) stableman, (48) vineyards, (49) policeman.

General Considerations.

When the results of these studies are brought together the following comparison of the nutrition of the children can be made. For the reasons already given we compare weight with age, using the British Anthropometric Standard. Table VI. gives a comparison of the percentage deficiency of weight compared with the Anthropometric Standard in the different classes.

It will be seen that in all three the nutrition is least affected during the first two years, that it is most markedly affected during the years of active growth following weaning, that during the period of decreased rate of growth from 4 to 10 it again falls, but that in the town families it shows a tendency to become more marked during the second period of active growth, above 10 years of age. This is least marked in the country families and most marked in the middle-class families. The country families suffer less than the urban and this may be correlated either with their more open-air life or with their somewhat better diet as shown in Table VII.

TABLE IV.—*Number of Middle-Class Families using the various Foods.*

—	Urban.	Rural.
Fresh milk	15	38
Butter	5	15
Margarine	18	15
Lard, fat, &c.	29	18
Pork	7	13
Goats' flesh	—	7
Beef, veal, or mutton	15	8
Sausage	14	8
Green vegetables	31	39

TABLE V.—*Nutrition of Children: Average Height and Weight of Country Children at Different Ages, compared with British Standard Average.*

(*Sexes Combined.*)

(A) = Per cent. under Anthropometric Average.

Age in years.	No. of children.	Weight. Pounds	Weight. (A)	No. of children.	Height. Inches.	Height. (A)
1–2	17	19·3	5·4	—	—	—
2–3	18	22·6	21·1	14	28·4	13·6
3–4	15	25·7	21·8	14	33·0	9·8
4–5	15	30·2	17·2	15	33·4	13·0
5–6	8	33·1	15·1	8	34·8	14·5
6–7	6	38·8	7·6	6	37·9	11·8
7–8	6	43·2	11·7	6	42·0	7·6
8–9	9	47·2	10·2	8	42·0	10·2
9–10	2	49·8	13·8	2	42·3	14·1
10–11	2	55·9	13·6	2	47·3	8·3
11–12	4	61·7	11·8	4	49·0	8·1
12–13	2	68·8	10·5	2	51·5	7·3
13–14	3	72·7	13·3	3	50·0	12·6

TABLE VI.

Age in years.	Average percentage deficiency in weight. Working class (town).		Country families.		Middle class (town).	
Under 2	(7)	14·8	(17)	5·4	(6)	8·7
2–4	(23)	26·5	(33)	21·4	(24)	22·5
4–10	(62)	13·2	(46)	13·4	(51)	16·0
10–14	(21)	15·5	(11)	12·3	(24)	21·5

TABLE VII.—*Comparison of Town and Country Families.*

—	Per man per day. Calories.	Proteins.	Fats.
Viennese.			
Working-class—			
Non-rachitic	2325	71·6	38·8
Rachitic	1885	68·4	41·5
Middle-class—			
Non-rachitic	2053	58·3	53·5
Rachitic	2049	61·8	50·2
Rural.			
Non-rachitic	2401	78·5	57·5
Rachitic	2262	63·3	58·2

Up to about eight years there is no marked difference in the deficiency of height in the three groups, but after this age the rural children fall more markedly below the standard of height, while showing a less deficiency in weight. The cause of this is not apparent. In all three groups the height of the mother was rather above the Anthropometric Standard, but in the rural families the fathers were more distinctly below it than in the other groups. In the working-class families they were actually above it. Possibly growth may have been reduced by too early work in the fields.

Rickets.

Our study included 424 children, urban middle-class, urban working-class and rural, and 108 of these, or 25 per cent., showed signs of rickets, past or present. MacGregor † found that of 1277 children between the ages of 6 months and 10 years admitted to a Glasgow fever hospital, 44·4 per cent. of those born in Glasgow of Glasgow parentage, 33·8 per cent. of those born in Glasgow but having country-bred parents, and 25·4 per cent. of country-born children of country parentage showed evidence of rickets. Further, Kassowitz, before 1910, stated that 89 per cent. of children admitted to hospital and 59 per cent. of his private patients in Vienna manifested signs of rickets.

The evidence thus does not indicate that there has been the marked increase in the disease since the war which is commonly stated to have occurred. It would rather seem that attention being directed to the condition has led to its diagnosis in children in whom it would not have attracted attention in former times. In Glasgow and in other cities where rickets is prevalent—and Kassowitz's figures indicate that it was so in Vienna—parents are apt to regard it as inevitable and of little moment and they rarely consult a doctor about it unless in severe cases. Further, the fact that in so many families a considerable proportion of the children above the age of 6 show rachitic deformities indicates that the condition had developed before war conditions were established. The cases of rickets were distributed among the different groups as shown in Table VIII.

TABLE VIII.—*Distribution of Rickets.*

—	Total No. of children.	Rachitic children. Number.	Rachitic children. Per cent.
Working class (urban)	153	43	28
Middle class (urban)	124	21	17
Working class (rural)	147	44	30

In the working-class families it occurred in 58 per cent. of the families. In the middle-class families it occurred in 35 per cent.: the type was generally mild and it usually affected the younger children. In the rural families 26 out of 50 families had cases of rickets —52 per cent.—and the deformities were frequently very marked.

The high incidence of rickets in the rural families with their higher intake of natural milk fats is of interest. A comparison of the diets of the three groups (Table VII.) does not indicate that the lesser incidence of rickets in the middle classes is associated with a greater consumption of milk or other fats.

TABLE IX.—*Rickets in Relation to Average Size of Families.*

—	With rickets.	Without rickets.
Urban working class	3·1	2·1
Urban middle class	3·0	2·25
Rural working class	4·2	2·0

TABLE X.—*Rickets in Relation to Age.*

Reference No. of family.	Age of children. (Rachitic children in brackets.)							
11	11	(8)	(7)	(4)	(3)	(1)	—	—
12	8	(3)	(3)	(1)	—	—	—	—
18	28	22	19	(12)	7	6	(4)	—
30	22	20	14	(11)	(9)	(8)	(4)	(2)
34	17	16	14	13	11	(8)	(4)	(1)

† MacGregor: Proceedings of the Glasgow Philosophical Society, vol. xl., p. 156.

The conclusions of previous investigators that rickets tends to affect the later members of large families is borne out by these observations.

This and the familial incidence of the disease is strikingly shown in families 11, 12, 18, 30, and 34 of the rural series.

General Conclusions.

The general conclusions of all these studies is that a state of under-nutrition affecting the growth of the children has existed in Vienna and the adjoining country. No evidence is afforded that this has been associated with any marked increase in the incidence of rickets. Life and a certain amount of activity have been sustained upon a gross energy intake of little over 2000 calories per man per day, which must be explained in the light of Benedict's finding that under-nutrition markedly decreases the basal metabolism.

The great help received from the Friends' War Victims Relief Committee, who have done so much to save the lives of these children, made it possible to carry out the investigation. The expenses of the work were partly defrayed by the Medical Research Council.

PROGNOSIS IN PATIENTS PRESENTING RAPID ACTION OF THE HEART.*

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THE difficulty and fascination of prognosis give it a foremost place in the elements of the science of medicine. Many factors are required before a satisfactory attempt can be made to forecast the future of a patient; but patients and their relatives are entitled to a clear expression of opinion. There is no more searching test of a man's knowledge of medicine than his power of accurate prognosis; such a prognosis is only possible in the presence of an accurate diagnosis, familiarity with the usual course of the disease, a correct valuation of the various symptoms, and a sure knowledge of treatment. There is no better exercise in humility than the habit of writing out the prognosis in full, and checking it by results. My subject is confined to that of prognosis in patients manifesting rapid heart action, the question of prognosis in heart disease generally being far too comprehensive to be dealt with satisfactorily in a short paper.

There is no more common deviation from the normal rhythm of the heart than increased frequency. We meet with it constantly, for the rate of the heart is at the mercy of any passing emotion, transient pyrexia, or physical effort. In most instances the cause of rapid action can be accurately recognised and rapidly assessed; but this is not always so, and it is of considerable importance that the significance of this physical sign should be recognised and its bearing on prognosis determined.

The foundation of a correct prognosis is correct diagnosis, but much more is required; a clear understanding of the nature of the rapid action may coexist with a hazy and uncertain conception of the course of the illness. The character of the heart's response to the tachycardia must be appreciated; does the heart manifest signs of distress, or does it accept the increase in rate with equanimity? The health and adequacy of the other organs must also be taken into consideration, and before any definite opinion can be ventured on it is essential that the response to treatment should be observed. All the above factors must be correlated in order to arrive at an accurate prognosis.

Two Groups of Cases: Causes of Rapid Action.

The first essential in considering any case of rapid heart action is to determine whether the rapid action is due to an acceleration in the normal stimulus production—as met with in exercise or emotion—or to the inception of an abnormal rhythm, as for example, fibrillation of the auricle. It is obvious that no accurate prognosis is possible if this question is not settled. In by far the greater number of cases presenting increased rapidity of heart action this variation is due to influences acting on the heart through the nervous mechanism by depressing the vagus, by stimulating the accelerator nerves, or by a combination of both, and the consequent disturbance of the normal balance. In the smaller group, nervous influences are no longer effective. The sino-auricular node is not responsible for the orderly contraction of the heart, the "pace-maker" is side-tracked and some other point in the heart dominates the rhythm.

Under normal conditions the rate of the heart is constantly changing, and as a rule these changes in rate are part of a compensatory mechanism. They are complementary; the change in rate is only one of many alterations in the circulation all directed towards an increased efficiency. The heart beats quicker in order to meet some stress or difficulty. Variations in blood pressure are associated with variations in rate.

Function of the Heart.

The heart's only function is to supply oxygen to the actual tissues. There must be an adequate supply of oxygen for "the capillary bed, in that short space in which the real business of life is transacted," as Osler described it. For this function to be efficient there must be an adequate output of oxygen-bearing blood from the heart every minute. For example, increase in effort is associated with higher consumption of oxygen by the muscles; this necessitates a freer supply of blood, and the heart beats more rapidly in order to increase its output. The variation of the latter is remarkable; at rest the general output per minute is 3 to 5 litres; with moderate effort, 8 to 9 litres; during heavy work it may reach 20 litres per minute—four times the amount discharged while at rest—an increase showing the reserve power of the normal heart and the call that may be made upon the circulation. The two factors determining output are increase of output per beat and acceleration of the heart rate. The increased rapidity of the heart is chiefly responsible for increased output, but in the highly trained athlete there is a definitely larger output with each systole. Such is the condition in a normal heart in an average state of health. In such a heart an increased rate, when a greater output is required, is all to the good. It is evidence of an accurate compensating mechanism. Where, however, the rate is maintained at a high level without an increase in output, or in the absence of any need for an increased output, the efficiency of the heart diminishes and a high rate is then detrimental.

Physiological Causes of Rapid Action.

The causes of rapid action of the heart in which the rhythm is physiological are emotion, effort, a weakened or defective myocardium, anæmia, pyrexia, toxæmia, exophthalmic goitre, neurasthenia, D.A.H., and drugs. In all these instances a graphic record would show that the auricles and ventricles contracted normally in relation to each other. In each, the cause of the rapid action is a factor outside the heart, working through the nervous mechanism, which causes the pace-maker to become more active. This holds true even when the heart is itself diseased, for then the increase in rate is an attempt to provide an adequate circulation with an inadequate heart; the diminished output per beat is neutralised by the increased number of beats per minute. An increased rate in cases of organic disease is an evidence of cardiac inadequacy, and is of importance in prognosis. This physical sign is of considerable value in cases of aortic regurgitation, where a persistent degree of slight tachycardia, such as 90 to 100 per minute, while at rest, is ominous. The same holds good in patients with high blood pressure. A steady increase in heart rate may be a valuable indication of progressive failure of the myocardium.

* Paper read at a meeting of the Liverpool Medical Institution.

In patients belonging to this group the diagnosis is generally obvious, and the prognosis is dependent on the general condition rather than the tachycardia. I do not propose to deal with them in detail, but will touch on one or two points of importance.

Tachycardia in Children: Toxic Tachycardias.

Not infrequently children are brought for an opinion because of rapid heart action. On examination the heart is found normal in size and there is no evidence of valvular disease, but the rate is 100 to 120 per minute and often more after games. With this the child is otherwise healthy, joins in the games vigorously, without discomfort or distress. It is well to remember that excitement and exercise may affect the heart rate in children to a remarkable degree, and if the child is healthy in every other respect, if the tachycardia is not accompanied by distress or discomfort and does not interfere with eating or sleeping, then I should not veto ordinary school life and games, provided there is reasonable supervision.

The tachycardias due to toxæmia are important, and the prognosis in any particular patient depends on whether the source of the toxin can be localised and dealt with. The gums, the accessory sinuses, the tonsils, and the gastro-intestinal tract must be surveyed. These patients present, perhaps, the greatest difficulty.

A most important form of toxic tachycardia is that met with in early tuberculosis, in which a rapid action of the heart may be the dominant physical sign, associated with some degree of pallor and lassitude. Physical examination of the chest may give little help—frequently there is a moderate degree of pyrexia, and this in itself may partially account for the tachycardia; but tachycardia is sometimes present in the absence of pyrexia—the apyretic tachycardia of early tuberculosis. Such a combination of tachycardia and normal temperature in early tuberculosis is significant and justifies a very grave prognosis. Such patients rarely respond well to treatment; their progress is steadily downward.

Value of Response to Effort.

In the attempt to arrive at a prognosis in nervous patients and those suffering from neurasthenia and D.A.H., the response to effort is helpful. For example, if the rate of the heart is 110 when seated, reaches 130 or 140 after a short period of moderate exercise, and then drops within three minutes to 80 or 90, the probability is that the myocardium is sound and exercise beneficial, if carefully supervised. The response to effort should also be estimated by careful cross-examination concerning the degree of the distress induced by the actions of ordinary life; the mentality of the patient being taken into account, and when possible the accuracy of the statements checked by personal observation.

It might be well to emphasise here the fact that in many instances tachycardia occurring in patients with valvular disease is not caused by or due to the valvular trouble, but is a pure neurosis. This is noticeable in patients suffering from mitral stenosis.

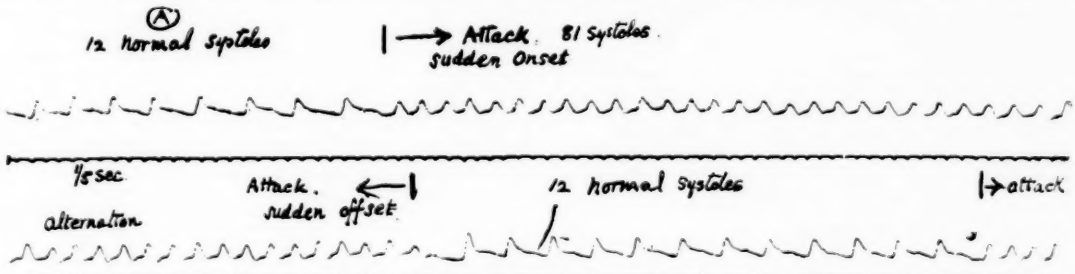
In the group which we have been considering it is of the greatest importance to discover the cause outside the heart responsible for the tachycardia, which is secondary to emotion, effort, anæmia, sepsis, or some other cause.

Primary Tachycardia.

In the second group the tachycardia is primary; the cause of the rapid action is in the heart itself, and in such patients the first step is to recognise the nature of this essential change. There are three forms: (1) Paroxysmal tachycardia; (2) auricular flutter; and (3) auricular fibrillation.

Paroxysmal Tachycardia.—One characteristic of an attack of this type is the suddenness of its onset, of which patients are often able to give a clear and decided account. When the tachycardia occurs in short spells the offset is also definitely dramatic. The attack terminates abruptly, and quite unlike the gradual slowing down of a burst of palpitation in a nervous patient. Rest, emotion, or effort do not modify the frequency during an attack of paroxysmal tachycardia.

The tracing here shown is from a patient during recurrent attacks of paroxysmal tachycardia. The paroxysm was preceded by 12 normal beats, consisted of 81 abnormal beats, and was followed by another series of 12 normal systoles before the recurrence of the pathological rhythm. In this patient the rapid action of the heart sometimes persisted for hours or even days. This condition of paroxysmal tachycardia is not common, and a diagnosis from simple palpitation with rapid action, in the absence of any opportunity of investigating an attack, may have to be made solely on the description elicited by careful cross-examination of the patient.



Radial records showing the onset and offset of a short attack of paroxysmal tachycardia. Alternation is present in some portions of the record.

In most instances the outlook is not grave. The patients are usually young, and the healthy heart of the young tolerates short paroxysms of rapid action without much discomfort; fortunately the paroxysms are rarely prolonged. The outlook is less satisfactory when the rate is extreme, when the duration of the bursts of heart hurry extends into days or weeks, and when the heart shows signs of distress. This is especially likely to be the case if there is old-standing heart disease, when a persistent rate of 150 to 200 beats per minute soon exhausts the myocardium, and the patient runs the risk of dying of cardiac failure. Even a healthy heart shows signs of distress as the result of a prolonged paroxysm, but it is possible to promise a rapid and remarkable return to a normal condition with the cessation of the paroxysm.

The most important factor influencing prognosis is the extent to which the presence of the rapid rate distresses the patient; this will depend on the rate of the heart during an attack, on the age of the patient, the presence of cardiac disease, and the frequency and duration of the paroxysms. In a small percentage of the cases the ectopic stimulus arises in the ventricle and not in the auricle or node, and it is agreed that in such patients the outlook is bad. This fact can only be recognised by means of the electrocardiograph.

Auricular Flutter and Fibrillation.—When the tachycardia is caused either by auricular flutter or by fibrillation the ventricular rate is increased because of the inception of an abnormal rhythm in the auricles as already described. Flutter and fibrillation are closely related, and flutter is often the precursor of fibrillation. In both the onset is sudden, but it does not follow that the patient is aware of this change in the action of the heart. Any persistently steady heart rate of 120 or over in an elderly person should suggest the presence of flutter, especially so if there be significant variations in rate, such, for example, as a rate of 106 changing to 160, or dropping to 80. The relationship of these numbers is very suggestive. The auricles are probably contracting 320 times per minute, and each ventricular rate is a fraction of that number. At first the ventricles respond to every third auricular beat—106—107—then to every second—160—then, with a pulse at 80, to every fourth; such figures justify a definite diagnosis of flutter.

Another point of importance is the presence or absence of irregularity. With the exception of extra systoles or a sinus arrhythmia, the irregularity associated with tachycardia is almost always evidence of auricular fibrillation, and it is well to remember that extra-systoles and a sinus arrhythmia are most unusual in a rapidly acting heart. An irregular action may, however, be met with occasionally in auricular flutter.

We are on safe ground then in diagnosing a pathological rhythm when both tachycardia and irregularity are present. I propose to cite a few typical cases of pathological tachycardia and discuss the prognosis in each.

CASE 1.—A man of 70 noticed some irregularity of the heart, and that he was more easily out of breath than formerly, but otherwise there was nothing to complain of. He did not know when these symptoms first began, but thought they had developed within the last 12 months. On examination he was found to be organically sound. There was slight enlargement of the heart, no evidence of valvular disease, blood pressure not unduly raised, action disorderly and heart rate varying from 90 to 100. Exercise increased both the irregularity and the rate. He was suffering from fibrillation, and its inception had not unduly disturbed him; the myocardium carried the extra disability comfortably, the rate was not excessive, and the circulation was relatively efficient. The prognosis was clearly favourable, the reserve power was diminished but still adequate. With some restriction in the amount of physical effort he should (and did) live for years.

CASE 2.—This case is that of a young woman of 30 propped up in bed in acute distress, rapidly becoming worse; she was cyanosed, the jugular veins were distended, her breathing was rapid, and she was expectorating blood; abdominal wall tender and resistant, liver enlarged, œdema of the legs, scanty urine, præcordium tender, heart dilated, diffuse forcible slapping impulse, rate 180 to 190 per minute; action disorderly, many beats failing to reach the radial artery. First sound short, loud and sharp, accompanied by a short systolic murmur of varying intensity. The history was that she suffered from rheumatic fever when 14, at which time her heart became affected. In spite of frank mitral stenosis she had led a moderately active life with comfort. Six days previously she noticed her heart beating more rapidly, and she became short of breath. Her condition had become worse, there was troublesome vomiting and she was obviously losing ground. The acute cardiac failure from which she was suffering was due to fibrillation of the auricle attacking a damaged heart. The heart was failing rapidly, and the immediate failure was due to two factors: (1) the tachycardia; and (2) the irregularity, which interfered with adequate diastolic filling. The patient would die, and that soon, if the tachycardia persisted, her state being clearly desperate.

The immediate prognosis depended on whether her heart would respond speedily to treatment, and seeing that it was a fibrillating rheumatic heart one was justified in feeling hopeful. She had to be brought under the influence of some member of the digitalis group, but on account of vomiting the digitalis administered at the beginning of the attack had been stopped. The vomiting was obviously not due to the toxic action of the digitalis, but more probably to an engorged and irritable stomach. There were two options—either to risk the vomiting and give big doses, ℥xx. of tinct. digitalis by the mouth four-hourly, well diluted, accompanied by a hypodermic injection of morphia; or to inject a milligramme of strophanthin into a vein. In this patient the former method succeeded, and within 24 hours she was obviously improving and out of immediate danger.

Before the onset of fibrillation her heart was moderately efficient in spite of the mitral stenosis, and in such a case it is reasonable to take the view that so long as the rate is controlled by digitalis the patient will get along comfortably. Her reserve power will necessarily be less than before the onset of fibrillation; she will have to live at a lower level of physical endeavour. If she neglects to take the small daily dose of digitalis required, her heart will again race and her life will be endangered.

CASE 3.—In contrast to Case 2 consider another, a successful business man of 60, energetic and capable, who had always lived an extremely active life, and believed himself to be in perfect health. He woke in the early morning in some discomfort and distress which rapidly became urgent; sat up in bed, gasping, his face pale, almost livid, anxious expression, forehead dripping with cold sweat, complaining of pain over the heart. The cardiac thrust was outside the nipple, the action of the heart tumultuous and very rapid, the radial pulse less rapid, some of the beats full and bounding, others small and almost imperceptible; the vessel wall was unduly palpable. The interpretation was not difficult. Fibrillation of the auricle had attacked a man suffering from high blood pressure. When the heart was beating at a moderate pace the large left ventricle, though with diminished reserve, was quite capable of maintaining an efficient circulation, but the sudden increase of the rate, the irregular filling during diastole and the necessity of maintaining a relatively high blood pressure had proved too much for the left ventricle.

Here, again, the immediate prognosis depended on one thing and one thing only—could the heart be slowed? The probabilities were against it; this type does not respond so readily as the rheumatic. Strychnine, caffeine, camphor, are all useless, and atropine positively detrimental. It is of no use attempting to stimulate the myocardium—the one imperative need is to slow the heart. Given a slow action the ventricle may manage comfortably. Digitalis or strophanthin must be exhibited and the shock and distress of the patient mitigated with morphia.

The immediate prognosis was very bad; but if the heart did respond and slow down there was a possibility that the attack of fibrillation might prove transitory after persisting a few days, but there would always be a liability to recurrence. If fibrillation persisted and the heart responded to treatment, there might be difficulty in this patient in maintaining the blood pressure at a sufficiently high level, the necessary optimum required for this man, with the result that he would be permanently crippled, and at not too distant a date his heart would fail, in spite of the British Pharmacopœia.

I should mention here that in patients suffering from fibrillation there are certain features revealed by the electrocardiograph, which when present indicate damage to the myocardium and add gravity to the prognosis. I refer to ectopic beats and variations in the Q.R.S. portion of the ventricular complex; but the essential guide is the response of the heart to its new burden as indicated by the symptoms of distress.

I have lightly sketched the pictures of these three cases attacked by fibrillation of the auricle, showing how each responded. It is manifest that the response depended on the capacity of the heart to tolerate the additional load of a rapid and irregular heart.

A Different Type of Pathological Rhythm.

It is well in formulating prognosis to remember that fibrillation may occur in short paroxysms, transient in duration. It tends, however, to become permanent. Let me relate an example of a different type of pathological rhythm:—

CASE 4.—A male, aged 31, who came under observation because of variations in his pulse-rate; he experienced little, if any, discomfort, but his medical attendant was anxious about him because, without apparent reason, the heart contracted at 140 per minute for a time, and would then drop to about 90 or possibly become irregular. The history was that four months before, when at sea, he had "gone sick," and a diagnosis of pericarditis had been made. On reaching Liverpool he was admitted to a hospital where he remained three months, being treated for "pericarditis." During this time his heart rate varied, and on being cross-examined he gave the prevailing rates as 70, 90 to 95, and sometimes a very rapid action. Treatment had entailed rest and some digitalis. When discharged the action of the heart was still unsatisfactory, although it caused him no distress. The prognosis was of special importance because

he wished to get married. Medical justification for marriage depended in the first instance on the diagnosis.

Whether he had ever had pericarditis I do not know; there was certainly no evidence of it when I saw him, but his statements as to the peculiar and significant variations in his pulse-rate during his illness were most suggestive and indicated the presence of auricular flutter. A pulse-rate of 70–94–140 is most easily explained by an auricular rate of 280 with a 4 : 1 or a 3 : 1 or a 2 : 1 ratio, and this was proved to be the case by polygraph and electrocardiograph. A condition of auricular flutter having been demonstrated it was satisfactory to find that the patient was little, if at all, disturbed by the varying rhythm, and though the heart was larger than normal there was no evidence of valvular disease or cardiac distress. Up to this point the outlook was good if the flutter could be arrested. Had the flutter persisted in spite of treatment, the prognosis would have varied according to the degree of slowing produced and maintained by digitalis.

Prognosis now depended on the response to treatment. To test the possibility of cutting short the flutter, the patient was again put to bed, and on May 7th 1 drachm of the tinct. digitalis was given daily. After 7 drachms had been taken the flutter ceased and was replaced by fibrillation. The dose of digitalis was then increased to ℥ ii. daily, and within 24 hours the action of the heart was normal. The question had become narrowed down to the probability of further attacks of a similar nature; no certain answer could be given, because there is a definite tendency to recurrence when once flutter has manifested itself, but it was reassuring to know that even if they recurred, adequate treatment would probably cut them short. Under the circumstances one did not feel justified in standing between the patient and his marriage.

Flutter, then, may present itself as an isolated attack which is never repeated. There may be numerous short paroxysms extending over many years, or the flutter may continue for months or years, and eventually pass into a normal rhythm. Much less satisfactory is the change into fibrillation when and if the latter persists, for this rhythm proves a still greater strain on the staying power of the heart. Experience has shown that when flutter occurs in paroxysms the first is generally the least severe. The most reliable guide to prognosis is the degree to which the heart and circulation are distressed by the rapid action, and the prognosis is always unfavourable in the presence of old-standing myocardial or chronic valvular disease.

Summary and Conclusion.

The rapid action met with in Group 1 is a symptom and nothing more; the manner of systole is normal, the rhythm is physiological. The element of danger is not in the rapid action but in the reason for its presence. The prognosis will depend on an accurate understanding of the primary cause and the possibility or otherwise of remedying it. In Group 2 the rapid action is fundamentally different. It originates in the heart itself. It is a disease rather than a symptom. The actual contraction of the heart is abnormal and less efficient. In some patients the auricles and ventricles contract simultaneously, and in the majority the auricles have ceased to take any share in the circulation. The presence of tachycardia and irregularity is evidence of the existence of a pathological rhythm.

The immediate danger to the patient results from the exhausting effect of the rapid and relatively inefficient action of the heart. The faster the rate the greater the danger. The prognosis improves as treatment is effectual in slowing the heart. Rate for rate the prognosis is graver if the action is irregular. Irregularity results in inadequate filling of the heart during diastole.

In every case the immediate prognosis depends on the manner in which the heart has responded to the extra strain entailed by the sudden change in the rhythm. The accuracy of the more remote prognosis will depend on an acquaintance with the usual course, followed by the various forms of rapid action under differing conditions.

Of the three divisions of Group 2 the following is the order of severity: (1) paroxysmal tachycardia; (2) auricular flutter; (3) auricular fibrillation; and of the rheumatic and arterio-sclerotic types of fibrillation the rheumatic is on the whole more amenable to treatment.

VITAMIN-A CONTENT OF OILS

PREPARED FROM LIVERS OF THE COD, COAL-FISH, AND HADDOCK.

BY S. S. ZILVA, D.Sc.,

AND

J. C. DRUMMOND, D.Sc.

IN a previous communication in THE LANCET [1] attention was drawn to the exceptionally high content of vitamin A in cod-liver oil. The necessity of studying the preparation of this oil was urged in order to ascertain whether the best conditions were observed in its preparation. This problem has since been taken up by us as a part of an extensive investigation on the vitamin-A value of edible oils. During the early part of this summer we had the opportunity of visiting the Norwegian fishing grounds, where we inspected a number of cod-liver oil factories and where we collected numerous samples of oils of different origin and from different stages of the various processes of preparation. These samples are now in progress of being investigated in our laboratories.

The origin of the livers from which the medicinal cod-liver oils are prepared is of special interest. The Norwegian cod-liver oils are made from livers of fish caught near the Lofoten Islands and off the Finmarken coast. The fishing off the Lofoten Islands takes place between the end of January and the end of April. The catch during this season consists almost exclusively of mature cod which come to spawn on the coastal banks of the islands. After the spawning season is over these cod migrate to the Finmarken and eventually to the Murmansk coast. They reach the former place the end of May, where they join shoals of immature cod coming from the north. The physiological condition of the cod fished off the Finmarken coast is therefore different from that of the cod fished off the Lofoten Islands, since the Finmarken cod consists mostly of spent mature and immature fish. Another striking characteristic of the Finmarken oils is that they are mixed, owing to the fact that besides the cod (*Gadus morrhua*) other gadoids—namely, coal-fish (*Gadus virens*) and haddock (*Gadus aglefinus*) are being caught at this time in the Finmarken waters. In most of the Finmarken cod-liver oil factories the livers of the fishes mentioned above are worked up together, and consequently the so-called "cod-liver oil" from Finmarken is seldom pure cod-liver oil and may even sometimes contain no cod-liver oil at all. It was therefore our first problem to ascertain the relative potency of cod, coal-fish, and haddock liver oils.

The oils were tested out quantitatively by the method devised by Zilva and Miura and described elsewhere. By this method it was previously found that a daily addendum of 2 mg. of certain crude cod-liver oils was sufficient to promote growth in rats which had ceased growing owing to a deficiency of vitamin A. The high potency of such oils can be realised when one remembers that as much as 0·5 g. of butter is sometimes required to achieve the same result. The above oils were, however, of unknown origin. The oils utilised in this experiment, on the other hand, were collected by us personally in Finmarken, and prepared from the unmixed livers of the respective fishes caught this season in that locality. They were clear, slightly yellow oils, composed of the first two fractions drawn off the steamed livers. The pure cod oil was found just as potent as the liver oils hitherto tested out quantitatively, a daily dose of 2 mg. being required to induce the resumption of growth in rats. Coal-fish oil was even a little more active; slightly less than 2 mg. was found to be the minimum daily dose. Haddock oil, although not so active as the cod and coal-fish oils, showed also a high potency, the minimum daily dose in this

[1] Zilva, S. S., and Miura, M.: THE LANCET, 1921, i., p. 323.

case being 10–15 mg. A lower potency than this has been observed by us in a well-known brand of Norwegian medicinal cod-liver oil sold in this country. It is to be noted that these liver oils originate from fishes belonging to the genus Gadus, and we are now investigating whether oils of other genera also exhibit this exceptionally high vitamin-A potency. The relative potency of Lofoten and Finmarken medicinal oils and the influence of the mode of preparation of the liver oils on the vitamin content will form the subject of a separate communication.

The expenses of this research were defrayed from a grant made by the Medical Research Council, to whom our thanks are due.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF GANGRENE FOLLOWING MEASLES.

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THE following case appears worthy of record owing to the rarity of gangrene as a complication of measles and to the extreme youth of the patient. I have up to the present found no other case recorded.

M. M., aged 4½ years, was admitted to the borough infectious diseases hospital under my care on the fourth day of disease suffering from measles. She had had bronchitis at nine months and pneumonia when aged 2. On examination she presented a typical measles rash and signs and symptoms of broncho-pneumonia. She was obviously very ill, temperature 104° F., breathing difficult, and some cyanosis. Temperature remained high, in the region of 104° and 105°, and on the ninth day some meningeal symptoms intervened. These subsided on the eleventh day, and on this day a few dark purple spots were observed on the left leg and both limbs showed signs of circulatory troubles and became cold and pale. Active treatment was begun, a few septic spots were observed on the cheek and one on the abdomen. Within the next 24 hours gangrene made its appearance on the toes of the left leg and rapidly spread up that leg to the region of the knee-joint, a well-marked line of demarcation forming at the level of the junction of the upper and middle thirds of the tibia; at the latter part of this period of 24 hours a patch of dry gangrene was observed on the great toe of the right leg. The condition of the child was such that it was not thought advisable to operate and she died on the fifteenth day of the disease. A post-mortem was refused. Blood specimens were submitted to the bacteriologist and negative results obtained for the Widal test and for pathogenic organisms.

A CASE OF MULTIPLE SARCOMATA.

BY JOHN A. C. MACEWEN, M.B., C.M.,
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THE following case presents some features of interest.

J. G., a woman of 46, was admitted to Duke-street Hospital in February complaining of tumours in both breasts and one on the back. She had had 11 children, the youngest being about a year old, but the right breast had never lactated. The tumour on the back had been present for about eight years, had steadily increased in size, and had always been painful. That in the right breast had been present for about six weeks prior to admission, while that in the left she had only noticed recently.

On examination the tumour in the lumbar region was seen to resemble a spina bifida in shape and general appearance, and was covered with glazed, dark-coloured skin. It was not movable, and while firm to the touch suggested fluctuation on deep palpation which, however, caused considerable pain. The tumour in the right breast presented as a hard irregular mass in the upper and outer quadrant, and was slightly tender to palpation. The breast as a whole was unduly firm, but moved freely on the underlying structures. There was no puckering of the skin, retraction of the nipple, or enlargement of axillary glands. The left breast presented a small hard and tender swelling on the inner side. The tumour in the lumbar region was first operated on and removed without particular difficulty. It contained about 2 oz. of blood-stained fluid surrounded by quantities of necrotic tissue, and it grew apparently from the spines of one or two lumbar vertebræ, portions of which were removed along with the tumour.

Dr. R. M. Buchanan reported the fluid negative to tests for cerebro-spinal fluid. The tumour presented a highly vascular capsule encircling tumour tissue in great part necrosed. Another portion of tissue examined presented a dense fibro-vascular capsule of very varying thickness with small spicules of bone in places, and, centrally, tissue of the character of spindle-celled sarcoma. The right breast was also removed and Dr. Buchanan reported the tumour as a spindle-celled sarcoma.

Patient declined further operation and left the hospital, but in the interval the mass in the left breast had increased in size, the nipple was retracted, and the glands in the axilla were enlarged. We were informed that she became blind some time after leaving hospital.

Were the tumours in the breasts primary or were they secondary to the tumour in the lumbar region, and, if so, what was the channel of metastasis? Unfortunately, the pathological characters of the tumour in the left breast, clinically resembling a carcinoma, could not be ascertained.

A CASE OF INTRAPERITONEAL RUPTURE OF THE BLADDER DUE TO RETROVERSION OF THE GRAVID UTERUS.

BY DOROTHY CHATTAWAY, M.B., CH.B. BIRM.,
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With a Note by LEWIS GRAHAM, M.S. LOND., F.R.C.S. ENG.

THE following case is of sufficient interest to merit record.

Mrs. P., aged 25, was admitted to the Maternity Hospital, Birmingham, on June 10th, 1921, with acute abdominal symptoms complicating a four months pregnancy. Her general health had been good; she had had two previous labours, the first a breech presentation, the second normal. The history was that a fortnight before admission the patient had retention of urine for 48 hours followed by incontinence. No catheter was passed. On the afternoon of June 9th—i.e., 30 hours before admission—she became rapidly worse. She was seized with sudden acute abdominal pain and passed no urine after this.

On admission she was obviously very ill, pale, and collapsed, pulse 120 and feeble, temperature 99·2° F., respiration 40. She complained of severe abdominal pain. The abdomen was distended and tender all over. The uterus could be felt the size of a four months pregnancy. There was free fluid in the abdominal cavity. A catheter was passed and 20 oz. of urine withdrawn. This contained thick pus, blood, and shreds of bladder epithelium. The patient had a slight "show" shortly after admission. On vaginal examination the os was dilated and the foot presenting.

The case was seen by Mr. Lewis Graham and a diagnosis of intraperitoneal rupture of the bladder made. The abdomen was opened at once. The peritoneal cavity contained over a gallon of turbid foul urine. The bladder was contracted and a rupture about 2 inches long was present at the fundus. This was sutured with catgut. The abdomen was drained by one large drainage-tube. The patient's condition after operation was very grave and an intravenous saline was given. The fœtus was expelled at 8 A.M. the following morning, the placenta, which was adherent, being removed manually.

The patient made a good recovery. She wore a self-retaining catheter for a fortnight and was catheterised at regular intervals till June 25th when she first passed urine normally. She left hospital on July 11th quite well.

Note by Mr. LEWIS GRAHAM.—The interesting features of this case are its great rarity and the fact that a patient was able to make an uninterrupted recovery after having a large amount of foul urine in the peritoneal cavity for 30 hours. The diagnosis was obvious and the treatment easy, although when first seen the patient appeared moribund and not worth operating on. However, an operation was her only chance, and she made the above remarkable recovery.

A CASE OF COMBINED EXTRA- AND INTRA-DURAL HÆMORRHAGE; RECOVERY.

BY M. L. TRESTON, M.R.C.S., L.R.C.P.LOND.,
CAPTAIN, I.M.S.; SURGICAL SPECIALIST, INDIAN ARMY.

THE case here described is that of a young, well-developed Hindu. He was found unconscious, in the early hours of the morning, some distance from his camp, and was sent to the nearest base hospital, at Basra. On investigation it appeared that he had had an argument with one of his companions the night before which ended in a set-to fight with sticks.

On admission.—The patient was comatose and breathing stertorously. Temperature 102° F., pulse low and bounding. There was marked bruising, but no external wound, over the left side of the scalp, with congestion of both eyes, slight proptosis of the left eye, and dilatation of the left pupil. The right upper extremity was paralysed. A diagnosis of extra-dural hæmorrhage was made, and an immediate operation undertaken. There was no fracture of bone to be discerned beneath an extensive and œdematous skin flap. A ¾ inch trephine was applied over the Sylvian point, and on removal of bone blood gushed out, dark and with clots at first, but rapidly becoming arterial. It was found to be coming in jets from the bony canal of the middle meningeal artery, at the antero-inferior angle of the parietal bone. The bone was carefully chipped away, and the proximal end of the artery found and ligatured.

This part of the operation completed, the dura projecting into the wound was seen to be bluish-black in colour, tense, and pulseless. A crucial incision was made into it, and a mass of blood clot gently removed. The clot, about 1½ inches in extent, was lying over the divisions of the Sylvian fissure, and extended into the main limb of the fissure for a short distance. No bleeding points were observed after removal of the clot, and the brain surface appeared healthy. The opening in the dura was closed and the skin flaps sutured.

Progress.—The patient regained consciousness 12 hours after the operation. The wound healed by first intention, and the movements in the upper limb began to return slowly. But there was complete motor aphasia; the patient could not write, and his efforts at speaking only resulted in a long drawn ō. He understood what was said to him and could read and make his wants understood by signs. During the four weeks he was under observation improvement in arm movements continued, but the aphasia remained the same.

The case is of interest in view of recovery from extra-dural hæmorrhage, combined with intra-dural hæmorrhage, and with damage to the motor speech area.

TWO UNUSUAL GYNÆCOLOGICAL CASES.

BY J. C. HOLDICH LEICESTER, M.D., B.S., B.Sc., M.R.C.P.LOND., F.R.C.S.ENG.,
LIEUT.-COLONEL, I.M.S.; PROFESSOR OF MIDWIFERY AND GYNÆCOLOGY, MEDICAL COLLEGE, CALCUTTA; SURGEON TO THE EDEN HOSPITAL FOR WOMEN, CALCUTTA.

THE following cases are sufficiently unusual to be worth recording. The first, an example of malignant disease infecting the cervix after a subtotal hysterectomy for what was apparently a simple fibroid growth, also shows what an extensive growth can be present with such a short and trifling history.

CASE 1. *Columnar carcinoma occurring in the cervix left after a subtotal hysterectomy.*—Mrs. W., aged 40, came to see me on August 3rd, 1920, with the following history. She had been twice married, had had three children, the last 16 years ago, and one miscarriage at the fifth month, 14 years ago. In 1913 she had had the uterus removed by subtotal hysterectomy, apparently for "fibroids," and had not menstruated since. Two months ago she had a very slight blood discharge from the vagina; this occurred again one month ago, lasting only half an hour or so in each case; otherwise she was feeling perfectly well. On abdominal examination nothing abnormal was detected except a movable right kidney. On pelvic examination the cervix was found to be freely movable, but rather hard, with slight ulceration on the left side, bleeding on examination. On August 5th, under chloroform, I removed a small wedge-shaped piece of the cervix for examination which Major F. P. Mackie, Professor of Pathology at the Calcutta Medical College, kindly cut for me and reported as definitely showing malignant changes. On the 20th, under chloroform, I removed the whole cervix and upper part of the vagina by the extended method of Wertheim. None of the glands were involved. The patient made an uninterrupted recovery and was discharged on Sept. 25th; the vagina had healed and there was no thickening to be felt anywhere. The patient then underwent a course of radium treatment and has remained well up to now. Major Mackie kindly examined the specimens for me and reported an extensive growth of columnar carcinoma in the cervix, but so far as could be seen the operation had removed a good margin of healthy tissue all round.

CASE 2. *Early rupture of a tubal gestation.*—P. M., a Bengali, aged 27, was admitted to the Eden Hospital on Feb. 5th, 1920, with the following history. She had had seven children, the last seven months ago. She had had two menstrual periods since her confinement, the last being from Jan. 12th to 17th, which was normal in every respect, and came at the proper date. At 7 A.M. on Feb. 5th, on getting out of bed, she suddenly felt very ill with pain in the lower abdomen on the right side, which had gradually increased up to the time of her admission to hospital at 2 P.M. Condition on admission: patient blanched, pulse 142, soft and small; abdomen was somewhat distended and tender but not hard; some dullness in both flanks. Per vaginam some sense of fullness noted on the right of the uterus. A diagnosis of ruptured ectopic pregnancy was made. The patient was prepared for an operation, which was performed about two hours later. On opening the abdomen I found a fair amount of dark blood-clot, and on examining the pelvic organs there was a slight dilatation of the right Fallopian tube in the isthmic portion, about the size of a marble, which had ruptured. The tube was removed and the abdomen closed, 1½ pints of normal saline being left in the peritoneal cavity. Nearly one pint of blood and blood-clot had been removed from the abdomen. The patient had some fever for the first four days, but after this she made an uninterrupted recovery.

Reviews and Notices of Books.

THE PRINCIPLES OF THERAPEUTICS.

By OLIVER T. OSBORNE, M.A., M.D., Professor of Therapeutics, Yale University. Philadelphia and London: W. B. Saunders Company. 1921. Pp. 881. 35*s*.

THERE is an opinion prevalent in certain advanced circles that the drug treatment of disease is relatively useless and that the prescription of a bottle of medicine will soon be a thing of the past. It is a refreshing change, therefore, to read the dicta of Prof. Osborne that "the absolutely drugless treatment of acute and really tangible chronic illness is a myth"; that "drugs must be, and are used legitimately for the vast majority of all patients"; and that "if there is nothing the matter with a patient, of course he can be cured of what he did not have by what he does not get." The book is divided into 15 parts, of which the first deals with general principles, and in it the need for the introduction of the metric system is emphasised. Parts 2 and 3 concern the preparations, prescription, and therapeutics of the valuable drugs of the U.S.A. Pharmacopœia. Only useful drugs that have a demonstrable activity are described, and the author advises simple prescriptions containing the best official preparation of the drug and, if soluble, in the most agreeable solution. The therapeutic action of drugs is discussed on sound lines from the clinical and empirical standpoint, and the subject is simplified by the exclusion of drugs of doubtful value and the omission of many preparations. Readers may vary in their opinion as to whether the author has made a wise selection in his choice of drugs, and some will find their favourite drugs omitted; thus there is no mention of sodium bicarbonate and sodium chloride in the treatment of cough, nor is there any reference to tolu among expectorants. Prof. Osborne states that there is no excuse for the use of squills as an expectorant, and that heroin has no activity not shared by codeine; he even says that the tendency of heroin to cause a pernicious habit should preclude

its use in medicine. The paragraphs on the use of digitalis are open to criticism, for the action of the drug and indications for its use are not stated in clear terms, as is possible in the light of the newer exact knowledge that we have of its action. The author appears to think that it raises blood pressure, an opinion that requires definite qualification; moreover, the discussion of its applicability in mitral and aortic disease before the statement of its use in auricular fibrillation tends to give a wrong impression.

More than a hundred pages are devoted to the endocrine glands and organo-therapy, and the author's remarks on this subject are a useful counterpoise to the optimism of the advertisements and brochures that describe commercial preparations of endocrine glands; at the same time the account of the clinical application of certain preparations, the specific activity of which is still in doubt—for instance, of corpus luteum extract—seems unduly confident. There are excellent chapters on practical therapeutic measures, specific therapy, and the general principles of dietetics. Separate parts are devoted to the consideration of general physical measures, such as electricity, hydrotherapy, massage and climate, of drug and industrial poisoning, the treatment of emergencies and some simple skin lesions. The last chapters deal adequately with medical ethics and contain useful advice to young physicians.

It will be seen that the book covers an immense field. The author is obviously inspired with high ideals and his writing is something more than an expression of opinion and a record of fact. His style is epigrammatic and direct, and one of the themes which run through the work is the effort to remove the mystery that tends to cling to drug treatment by demonstrating its real value on simple lines.

FIRST AID AND RESCUE WORK IN MINING.

By LOUIS G. IRVINE, M.D., B.Sc. Edin. With Prefatory Note by J. S. HALDANE, M.D., F.R.S. Johannesburg: South African Red Cross Society. 1921. Pp. 348.

IN a little book which presents an entirely new combination of facts and knowledge on first aid and mine rescue work, Dr. L. G. Irvine contends that "it is far better in practice to train a limited number of persons well, than to give a smattering of knowledge to a larger number." The value of public first-aid competitions and demonstrations in maintaining efficiency is undoubted, and Dr. Irvine's book will stimulate interest in these matters in South Africa, where interest is much needed. The subject of mine rescue work is advancing so fast in this country that text-books dealing with its practice are soon behind the times. For example, the few pages devoted to training and organisation of mine rescue work seem to be behind that suggested by our Coal Mines Act. The regulations of this Act provide an excellent scheme of organisation which has been put into practice, especially in the northern colliery district.

Part I. deals with anatomy and physiology on similar lines to our advanced manuals on the subject. Special emphasis is laid on first aid in mining accidents, with useful practical points often omitted in such handbooks. The physiology of respiration is not as detailed as it might have been, while the illustrations are more than usually clear and explanatory. In Part II. the equipment and organisation of first aid in mines is brief, little more than two pages of South African law being included in this section. The Red Cross plank stretcher is ceratinly worthy of adoption by mine managers in this country, owing to the impracticability of our ordinary stretchers in the awkward places met with during transport in a mine. The chapter on gaseous impurities in mines and their effects gives a good résumé of known facts, though the matter might be more clear and concise. The author gives precedence to nitrous fumes over sulphuretted hydrogen as a mine air impurity, a point which has long been neglected by previous authors on this subject. The description of sulphuretted hydrogen gas as reminiscent of "rotten eggs" is omitted in this volume; Dr. Irvine suggests "gob stink," a somewhat undefinable odour, as an indication of the presence of this gas, and repeats the same warning as a means of detecting carbon monoxide.

The account of the ways of detecting gases for mine rescue purposes is poor. Dr. Irvine maintains that a canary is not to be depended on to detect CO/0·1 per cent. (p. 332), although he admits the use of canaries as the only practical means of detection of this poisonous gas, without adducing experimental evidence to support it. He also states that if air is seriously deficient in oxygen, small animals will show symptoms of embarrassment before effects are produced on man. It has been shown, however, that a mouse will live in 7 per cent. or even less of oxygen, where a man would probably collapse, and in this country at least the condition of a mouse or canary cannot be used to give warning of deficiency of oxygen.

This book on the whole contains a handy collection of data which should be a valuable addition to first aid and mine rescue literature.

INTESTINAL TOXÆMIA;

or, Auto-Intoxication in the Causation of Disease. By ALEXANDER BRYCE, M.D., C.M., D.P.H.Camb. London: Andrew Melrose, Ltd. 1921. Pp. 180. 6s.

THIS book deals with a subject of great interest to the medical profession, for whom it is chiefly written; at the same time the author expresses a hope in the preface that his book may appeal to a wider public. Intestinal toxæmia is defined as "the auto-intoxication which owes its origin neither to food contaminated before it is swallowed, nor putrefying because of its content of noxious germs, but which arises from the digestion of foods by the bacteria normally present in the digestive tube." Had the subject been limited by this definition it might have been dealt with in the 180 pages which make the book, but unfortunately the author has been carried by his enthusiasm over an immense field of medicine which is largely unknown ground. Thus, on p. 27 the following among others are given as the causes of intestinal toxæmia: all dyspepsias, stasis from whatever cause, muco-membranous or other colitis, chronic nasal catarrh, adenoids and enlarged tonsils; all infectious disorders such as influenza and measles, and all conditions which reduce the toxicolytic power of the bowel, such as deficiency of digestive juices, alcoholism, tubercle and rheumatism. Only a method as orderly and condensed as that adopted by Liddell and Scott in the compilation of their dictionary, or as general in treatment as that adopted by H. G. Wells in writing a History of the World, could succeed in giving a clear view of the subject in so small a compass. Dr. Bryce's weakness is in his method, which consists alternately in explicit quotation from scientific work with exact reference to page and volume, and bald statement of a highly speculative kind. For instance, on p. 68, "it is an absolute certainty that pernicious anæmia can be produced by such small amounts of toxins as can be absorbed into the system from pyorrhœa alveolaris." There is also a tendency to express theories as facts, as in the statement that Still's disease "is due to an infection of the alimentary canal by the staphylococcus citreus." The book is written with the ardour of a missionary, and many diverse and interesting facts discovered in the course of recent research are correlated in a manner that stimulates the reader to new lines of thought and reflection. Putting aside the questions of sub-infection and bacteriæmia there are few who will disagree with the author's main thesis that intestinal toxæmia is responsible for much ill-health.

PHARMACY.

Materia Medica and Pharmacy for Medical Students. Fourth edition. By REGINALD R. BENNETT, B.Sc. Lond., F.I.C., Pharmaceutical Chemist. London: H. K. Lewis and Co., Ltd. 1921. Pp. xxiii.+264. 7*s.* 6*d.*

THAT a fourth edition of this handy summary of materia medica and pharmacy has been called for is in itself evidence of the value of the book, and shows that it fills a useful place in the student's library. The present edition resembles its predecessors, but has been enlarged by the inclusion of further information regarding the action and uses of the drugs and the conditions and diseases in which their preparations are given. The first 24 pages are introductory, and define various pharmaceutical terms used in the pharmacopœia and others in common use but unofficial. Then follow brief remarks upon the nature of the various plant principles, and a summary of the system of weights and measures used in medicine. In the main part of the book all the drugs in common use are described, with their botanical source, constituents, and official preparations; they are grouped according to their pharmacological action. The last sections give valuable dose tables, and four appendices deal with various types of incompatibility and with the phraseology of Latin directions in prescriptions. A good index completes the volume. The information given is both concise and reliable, and we recommend the book to medical students.

Drugs in Commerce: Their Source, Preparation for the Market, and Description. By JOHN HUMPHREY, Ph.C., F.J.I. London: Sir Isaac Pitman and Sons. 1921. Pp. ix.+116. 3*s.*

THIS volume is the latest addition to the Common Commodities and Industries series. Mr. Humphrey begins with a short introductory chapter describing the routes by which drugs are brought to this country and the kind of packages in which they arrive. There follows a series of six chapters giving a brief account of the commoner drugs (including those official in the British Pharmacopœia) arranged in alphabetical order. Each is briefly described in such a way that the reader may be able to identify it; the botanical and geographical sources are given and the active principles enumerated. A brief account of the method of collection and preparation for the market is included; but the natural orders of the plants and animals yielding the drugs are not given. The book is intended more for the general reader than for the specialist in pharmacognosy, and will serve a useful purpose in giving concise and accurate information on roots, rhizomes, stems, leaves, flowers, fruits, seeds, gums, resins, gum-resins, &c., as well as on the products of animal origin used in medicine, either in a crude state or for the preparation of galenicals. The illustrations include several photographs of drug packages and sale rooms, and line drawings of a number of the more important drugs.

THE CARE AND FEEDING OF CHILDREN.

Ninth edition. By L. EMMETT HOLT, M.D., LL.D., Professor of Diseases of Children in the College of Physicians and Surgeons, Columbia University. London: D. Appleton and Co. 1921. Pp. 149. 4*s.*

THIS little manual, which first appeared in 1894, has now reached its ninth edition, having been revised and enlarged so as to incorporate the more modern teaching on infant care. The book is written in the form of a catechism, the directions and explanations being given throughout in such simple language as admirably to adapt it for the use of the mothers and of the nursery nurses to whom it is addressed. Some, at least, of the recommendations made by Dr. Holt would not be unreservedly endorsed in this country. The five meals daily advocated for children during their second year would be considered excessive by many authorities. The quantity of milk recommended is also far in excess of that usually given during the second year, about 46 oz. daily being advised, and for children of three to seven a quart daily. Excellent formulæ are given for the various modifications of cows' milk, but there is no mention of the citration of milk as an alternative to excessive dilution. A valuable feature in the book is the stress laid upon the principles underlying infant feeding. An introduction is contributed by Dr. Eric Pritchard, who expresses the belief that the manual will act as an incentive to the establishment in this country of training schools for nursery nurses similar to those founded in America by the author.

MEDICAL CONDUCT AND PRACTICE.

A Guide to the Ethics of Medicine. By W. G. AITCHISON ROBERTSON, M.D., D.Sc. London: A. and C. Black, Ltd. 1921. Pp. 168. 6*s.*

THIS is a very good little book, and contains information upon more subjects than the important one of how the young practitioner should behave. Ethics for medical men, and indeed for all men, are admirably summed up in that portion of the Catechism of the Church of England which is known as "My Duty towards my Neighbour." But there are special problems connected with medical work and practice which can only be answered by a medical man who has attained ripe years. Dr. Robertson's book contains the solution of such problems, together with counsel upon the period between qualification and the commencement of practice. The advice in this chapter and, indeed, throughout the whole book is full of sound common sense, and the young practitioner who follows it will be saved many a stumble in his professional walk of life. Chapter XIV. deals with the question of medical secrecy, which is at the present moment exercising the minds of medical men to a great extent, and all will not agree with some of Dr. Robertson's views as expressed in the chapter which we have mentioned. One very useful part of the book is an indication of the manner in which Scots law differs from that of England in certain points. Considering its size, the book is extraordinarily complete, and there is only one matter in which we think that Dr. Robertson has failed to be explicit, namely, in the paragraph about the administration of anæsthetics (p. 153), where he would have done better to give a warning that it is unwise for a medical man to administer an anæsthetic to a female patient except in the presence of a third person.

AUTOEROTIC PHENOMENA IN ADOLESCENCE.

Second edition. By K. MENZIES. London: H. K. Lewis. 1921. Pp. 100. 5*s.*

IN a recent number of a well-known American medical journal we read: "The climax . . . . . is not infrequently consummated in the doctor's office when the youth is bluntly confronted by the crippling results following masturbation." The underlying assumption is common in this country, and when evidence for it is sought there often arises a storm of protest such as follows only when our most irrational beliefs are questioned. The laity firmly believe in the dreadful effects of masturbation, and there results an enormous amount of mental conflict and remorse, often increased if the sufferer seeks aid or advice. The only literature likely to reach him is written by quacks, or by well-intentioned people who vie with them in attributing a terrifying host of evils to the practice.

Most medical text-books give scanty and almost furtive references to the subject, and the appearance of a second edition of Mr. Menzies's book indicates that it has satisfied a want. He accepts and uses psycho-analytical theories (perhaps a time will come when it will not be necessary for so many writers to give us preliminary expositions of these theories), but he quotes freely from authors of all views. He mentions Bang's view that "with every irritation of the urethra there is a corresponding irritation of a certain portion of the brain, which irritation excites the person to

increased sexual desire" (p. 69), but does not point out that it is purely speculative, though expressed in anatomical terms that seem much more convincing than psychological ones. The chapter on Ethical Considerations is a plea for reality-thinking instead of the false modesty and prudery that lead youth to learn in a prurient school a faulty antithesis between morals and reality. The final chapter, on Treatment, contains a demand for knowledge on the part of the instructor, and its tone can be indicated by the sentence, quoted from Brill: "It must not be imagined that robbing masturbation of its horrors encourages the practice."

The book is not a mere product of enthusiasm, as so many on "sex enlightenment" tend to be, but a scientific study of a subject the complexities of which are fully realised by the author.

A MANUAL OF VETERINARY PHYSIOLOGY.

By Major-General Sir F. SMITH, K.C.M.G. Fifth edition. London: Baillière, Tindall, and Cox. 1921. Pp. 892. Price 31*s.* 6*d.*

IN this well-tried manual Sir Frederick Smith's aim has been to show the bearing of physiology on the practice of veterinary medicine, surgery, and hygiene, a task of no little difficulty in view of the still very imperfect knowledge of the pathology of disease in animals. As Director-General of the Army Veterinary Service his opportunities of observing the working of the digestive and locomotor systems in horses were unrivalled. It is natural, therefore, for the book to be more confident in its treatment of equine than of bovine physiology. The arrangement of the subject is a section on each bodily system in turn, beginning with the blood and the heart, and ending with generation and development, two more general chapters dealing with Growth, Decay, and Death, and the Chemical Basis of the Body completing the book. The author has not only produced a noteworthy book but has known how to keep pace with the advancement of his subject. Undoubtedly, he is right in regarding laboratory team-work as essential for further progress.

VITAMINES—ESSENTIAL FOOD FACTORS.

By BENJAMIN HARROW, Ph.D., Associate in Physiological Chemistry, College of Physicians and Surgeons, Columbia University. London: George Routledge and Sons, Ltd. 1921. Pp. 219. 10*s.* 6*d.*

Dr. Harrow has made a good effort to present in a popular form the subject of nutrition, with special reference to accessory food factors. The title of the book is rather misleading, as only the second half deals with vitamins, the first part being devoted at considerable, if not unnecessary, length to calorie values, carbohydrates, fats, and proteins. The chapter on amino-acids and quality of proteins is the most succinct. The space so occupied might well have been given to the subject of vitamins, since this important part of the work consequently suffers from curtailment. Many more illustrations of the effects of the deficiencies due to absence of vitamins in the foods could have been included so as to emphasise the importance of these factors in the diet. In fact, the description of the vitamins is not quite on the level of recent teaching, and several minor errors occur. Extreme sensitiveness to touch is not characteristic of rickets, this symptom being due to complication with infantile scurvy. Bloch's cases of keratomalacia, which were cured by cod-liver oil and a whole-milk diet, are quoted as evidence of an association between vitamin A and rickets. If rickets is mainly associated with the absence of vitamin A (assuming sufficient B and C vitamins to be present in the ordinary food) it should now be possible to cure and prevent the disease. In any case the general reader will do well to keep himself informed of the work being done on this and kindred questions, and a popular book such as Dr. Harrow's should help to disseminate useful knowledge.

MATERIA MEDICA.

With Notes on Prescription Writing. By JAMES BURNET, M.A., M.D., Ch.B., M.R.C.P. London: J. and A. Churchill. 1921. Pp. 80. 4*s.* 6*d.*

THIS small book is one of the "Students' Synopsis Series," and is intended to aid the medical student in his study of materia medica. The various chemicals and drugs are arranged alphabetically, a very brief description being given of each; the doses are noted and the official preparations are enumerated. We think the author has made too great sacrifices for brevity. The information supplied is often incomplete; botanical source and natural order of the vegetable drugs are only rarely stated, and the descriptions are sometimes inadequate for recognition purposes. The last ten pages of the book contain a few useful notes on Prescription Writing, Incompatibility and Solubility.

JOURNALS.

BRAIN. Vol. XLIV., Part 2.—Percy Sargent: Lesions of the Brachial Plexus associated with Rudimentary Ribs. This is an analysis of 65 cases and the author's conclusions are as follows: (1) Variations in the composition of the brachial plexus are apt to be associated with costal abnormalities, prefixation with a seventh cervical rib, and post-fixation with an abnormal first thoracic rib. There is, however, no regular relationship between the costal and neural anomalies. (2) Of the several different types of cervical rib met with clinically that which most frequently requires treatment by operation is represented by an abnormally large non-jointed costal process, continued onwards as a dense fibrous band, to be attached to the first thoracic rib behind the sulcus nervi brachialis. (3) Symptoms of gradual onset result from continual slight traumatism to the eighth cervical root or lowest cord of the plexus, caused by the tightening of the band during respiration and in certain movements of the arm. (4) With a post-fixed plexus symptoms referable to the first thoracic root may be caused by the pressure of a normal first thoracic rib. (5) Vascular symptoms are vaso-motor in origin and result from injury to the sympathetic fibres shortly after their entrance into the eighth cervical and first thoracic roots. (6) The results of operative treatment in 50 cases have been traced for a period of from 2 to 12 years. Pain was cured in 19 cases and relieved in 8. Muscular wasting was cured in 12 cases, relieved in 12, and unrelieved in 7. Vaso-motor symptoms were cured in 14 cases, relieved in 6, and unrelieved in 2. Operation is not called for in all cases. Gentleness of manipulation, clean dissection, and a bloodless operative field are essential.

C. U. Ariens Kappers: On Structural Laws in the Nervous System: the Principles of Neurobiotaxis. After some historical remarks the author begins with the observation of Cajal that "if during embryonic development new axons pass to some region of the central nervous system, ganglion cells may approach these axons in two different ways, either by sending forth long dentrites or by a migration of the cell body itself." Kappers has found that this shifting of nerve cells is a very common occurrence, and he maintains as a result of his comparative researches on the topographic differences of homologous cell-groups in the central nervous system of vertebrates that it is determined by the places from which the largest number of excitations reach the cells; further, that not all excitations but only those with a functional relationship to the cell-group in question will cause this shifting. Next, whereas the growth of the dentrites is a stimulo-petal tropism, the growth of the axon bears a stimulo-fugal character. The occurrence in the same cell of two opposed tropisms the author believes to be due to a bio-electric influence, a species of galvano-tropism. The investigations of Sven Ingvar recently have proved the electric-galvanotropic character of the outgrowth of the axon.

That the galvano-tropism of the dentrites is actually opposite to that of the axon has also been confirmed experimentally by him. In trying to explain this opposite tropism we are immediately struck by the fact that this cathodic shifting only occurs with those parts of the neuron which contain Nissl substance; the axon which contains no Nissl substance exhibits a shifting in the opposite direction. This chromidial substance has been shown to have an acid character, and Hardy's researches show that acids favour the shifting towards the cathode of the colloidal fibrillæ that are suspended in it. The neurotropic theory explains mono-axonism as a result of the polar localisation of the anodotropic part of the cell, whereas poly-dentritism is based on the fact that the cell plasm has no place of predilection and is everywhere sensitive to the cathodic tropism. Lastly, the selectivity in the formation of neuronal connexions may be explained by the raised positive surface potential which appears near the cell shortly after some previous stimulation and which immediately follows its stimulation. Therefore the axon of a cell will be attracted to that cell among many adjacent ones with which it is functionally correlated, and upon this, no doubt, depends the connexion of the nervous system with the muscles.

J. L. Birley and L. S. Dudgeon: A Clinical and Experimental Contribution to the Pathogenesis of Disseminated Sclerosis. The paper contains the results of the clinical and bacteriological examinations of 35 cases, together with animal inoculations in 15 instances and a critical résumé of the work published in recent years on this subject. The clinical records are very full and illuminating. The following are the main conclusions. It is useful to recognise two clinical types of disseminated sclerosis: a remittent type and a chronic progressive type, which occur in the present series in the proportion of six to one. In early cases of the remittent type, once the acute disturbance has subsided the patient may present no clinical evidence of organic disease over prolonged periods. The possibility of spontaneous cure cannot, therefore, be entirely denied. The two types are to be regarded as manifestations of one and the same disease. The result of cultural and microscopic examination of the cerebro-spinal fluid is negative and no specific organism has been isolated in this series of experiments. The authors regard the transmissibility of the disease from man to animal unproved. They consider that the evidence in favour of the assumption that the pathogenic agent is a spirochæte is incomplete and in many respects unsatisfactory, and that the origin and nature of the morbid agent must for the present remain sub judice. But the evidence is overwhelmingly in favour of the view that the morbid process underlying the disease is inflammatory in character.

W. E. Gye: The Experimental Study of Disseminated Sclerosis. This is a record of the injection of cerebro-spinal fluid from cases of disseminated sclerosis into 129 rabbits and 15 guinea-pigs. Seventeen of the rabbits became ill and paralysed; the guinea-pigs all remained in good health. The author discards the suggestion that the animals which became paralysed suffered from that form of paralysis which is a frequent occurrence in rabbits kept in captivity, and he concludes, therefore, that disseminated sclerosis is probably an infectious disease and that the virus may sometimes be found in cerebro-spinal fluid.

M. G. Marinesco: Report on a Case of Myoclonic Encephalomyelitis of Malarial Origin. The case simulated the myoclonic form of encephalitis. The majority of the voluntary muscles were subject to myoclonic movements; the tendon reflexes of the limbs were abolished; the pupils were equal and reacted to light and accommodation; the abdominal and plantar reflexes were absent. There was slight rigidity of the neck and delirium. Lumbar puncture showed ten lymphocytes by division and the blood an intense mononuclear leucocytosis with numerous hæmatozoa and crescents. Post mortem, the striking features were thrombi of leucocytes in the veins of the cerebral cortex, the optic thalamus, the lenticular nucleus, the caudate nucleus, the grey substance of the peduncle, the red nucleus, and the corpora quadrigemina. In the white substance there was new growth of neuroglia of peculiar formation resulting in nodules. The size of these nodules was from 130 to 210 μ and they have been seen only in the deep white matter. Marinesco gives them the name "malarial nodules." Hæmatozoa were found in many cerebral capillaries in large numbers, but a search for them in the spleen, liver, suprarenal capsules, and ovaries was without result.

J. T. Wilson: The Double Innervation of Striated Muscle.

ANNALS OF MEDICAL HISTORY. June, 1921. New York: Paul B. Hoeber. 1921. Pp. 204. $2.50.—The editor, Dr. Francis Packard, may be congratulated upon this number of the Annals; Cardan and Montaigne, Byrhtferd of Ramsey are names which should interest everyone, though most probably the last named is unknown to the majority of English-speaking readers. There are also striking sketches of two American medical men—namely, Charles Caldwell and Lafayette Bunnell, the discoverer of the Yosemite. Dr. J. S. Taylor's paper on "Montaigne and Medicine" will certainly lead those who know their Montaigne to read him again, and those unfortunates who do not, to widen their minds by making a beginning of study.—Dr. Charles L. Dana recalls Cardan's famous visit to Edinburgh in 1552 to consult upon the case of that singularly disreputable prelate John Hamilton, Archbishop of St. Andrews, the very type of bishop to have "ordered a tomb in St. Praxed's Church" had his life not been cut short by the hangman. Dr. Dana mentions that Cardan on his return journey from Edinburgh went to see Frisius, the mathematician of Louvain, and incidentally remarks that "Doctors were often mathematicians in those days"; but he makes a slip when he goes on to illustrate this point by referring to Sancho Panza's remark when he fell off his mule, "Send for an algebraist." The word "algebra" in mediæval and even later times meant primarily redintegration and so bone-setting, while the Spanish word for a bone-setter is still "algebrista." That was what Sancho asked for, and not for a mathematician. The term occurs again in the incident of the fight with the Knight of the Mirrors (p. 35, vol. iii., of Duffield's translation): "The two went on .... until they reached a village where they had the good luck to find an algebraist who prescribed ...."—One of the most interesting papers in the number before us is that by Charles and Dorothea Singer entitled "An Unrecognised Anglo-Saxon Medical Text," being an account of the Handbook of Byrhtferd, an eleventh century MS. in the Bodleian. The MS. did contain a diagram, of which only a fragment remains, but fortunately this diagram had been copied into a MS. existing in St. John's College, Oxford, which is reproduced. The diagram illustrates the correlation of the macrocosm and the microcosm and the doctrine of the physical and physiological fours—e.g., four seasons and four ages of man; four humours and four cardinal winds, and so on. The diagram also contains two circles showing the relations of the months to the movements of the moon.—Dr. William Middleton gives a graphic account of Dr. Charles Caldwell. He was active in sanitary reform, but his character made him difficult to get on with.—A particularly interesting paper is that by Dr. Casey Wood on the First Scientific Work on Spectacles, published in Seville in 1623 and written by Benito Daca de Valdez, Notary of the Holy Office.—Among the reviews is one by Dr. David Riesman upon the Regimen Sanitatis. Therein he makes a statement which cannot be allowed to pass without protest; he talks of "the short stirring couplets of Celano's 'Dies Iræ.'" That wonderful composition happens to be written in trochaic triplets.

FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of

Professor CHARLES ACHARD, PROFESSOR OF CLINICAL MEDICINE IN THE UNIVERSITY OF PARIS. AND Dr. CHARLES FLANDIN, D.S.O., CHEF DE CLINIQUE À LA FACULTÉ DE PARIS.

ARTERIAL HYPERTENSION:

ITS CLINICAL MEASUREMENT, PATHOGENESIS, PROGNOSTIC VALUE, AND TREATMENT.

BY DR. L. A. AMBLARD,

FORMERLY INTERNE, PARIS HOSPITALS; MÉDECIN CONSULTANT, VITTEL.

THE earliest research work upon arterial tension and its application to current clinical practice, was carried out at the same time by Potain in France and Bach at Vienna. During the period from 1897 to 1907 practically all the work on the necessary instrumentation, on pressure, and on the methods of use of the knowledge gained, was performed outside France, by Mosso, Sahli, Riva-Rocci, Recklinghausen, Hill and Barnard, Oliver, Janeway, Erlanger, and others. In France, however, Marfan, Teissier, and Bouloumié must be mentioned; also Huchard, who demonstrated in a continuous series of publications the extreme importance of arterial hypertension, making of it the capital symptom of arteriosclerosis. In other countries the various pressures, systolic, diastolic, and mean, together with pulse pressure, were studied; in France up to 1907, before the publications of Amblard (of Vittel), the systolic pressure alone had been the object of measurement and study.

At this time Amblard showed the importance of simultaneous measurements of maximum and minimum pressures, and described the method, based on the work of Marey, and called the "oscillation method," which is now most commonly employed. Shortly afterwards he produced his sphygmometroscope for measurement of the two pressures; by this oscillation method the maximum pressure is obtained automatically and with precision.

Eventually Pachon produced his manometric sphygmometer, a perfected form of Pal's sphygmoscope, the coloured liquid indicator of which is replaced by a needle moved by the modifications of a capsule which retains a constant tension no matter what degree of pressure is applied to it. Since that time new work on arterial tension and its measurement, symptomatology, diagnosis, and prognosis, has constantly been published. Amongst all this research may be especially noted that of Vaquez, Widal, Josué, Amblard, and Gallavardin, in whose recent considerable work on "Arterial Tension in Clinical Practice" are set forth and discussed the most recent advances in this subject. The perfecting of apparatus has facilitated very complete clinical study of tension; the knowledge now at hand of maximum and minimum pressures links this clinical study up with physiological study, and considerably enlarges a hitherto narrow field of clinical research, permitting the hope that in a short while the estimation of the functional power of the heart will become a matter of ease; its difficulty is lessened almost daily by the publishing of fresh information.

Causation of Arterial Tension.

Arterial tension is the result of two antagonistic elements which equilibrate each other: (1) the force of contraction of the left ventricle, which tends to drive the blood from the centre to the periphery, and (2) the resistance offered to the flow by the more or less accentuated closing up of the small peripheral blood-vessels. This resistance to the flow is only susceptible to minimal variations from one moment to another. The force of ventricular propulsion is intermittent in its increase of the blood content of the arterial system. The pressure to which the arterial wall is subjected varies constantly, growing under the influence of the blood increase to a maximum—the maximum arterial tension, rapidly attained and then rapidly diminishing during the period separating one wave of increase from the next. Maximum arterial tension, then, is the index of ventricular effort; minimum tension is the index of resistance to the blood flow. In a young man the space separating these two pressures—the variable or pulse pressure—is about 60 mm. Hg, and the figures of normal tension range from 120 to 140 mm. Hg maximum, and from 70 to 85 mm. Hg minimum. When either factor—either cardiac contraction or peripheral flow—is modified, modification also results in the figures noted above. If modifications take place in the same direction, the conclusion may be drawn that the degree of tension has varied in the same direction; if the modifications are in opposite directions, no immediate conclusion can be arrived at concerning the modification of the degree of tension. That is to say, it is absolutely necessary, in order to estimate the arterial pressure of a subject, always to note the maximum and minimum pressures.

Measurement of Arterial Tension.

The importance accorded at the present time to arterial tension necessitates precise measurement. Some writers have attempted manometric improvements, others have worked to limit as far as possible the subjective element of measurement, and to substitute the automatism of a tactile instrument. At present two fundamental methods of measurement are employed in France, being undertaken by different means. The first of these methods is that of appreciation of tension by observation of altered blood pressure in a segment of a limb under the influence of a compressor placed on that limb. Of this type is Potain's sphygmomanometer, in which a rubber bulb is used to compress the radial artery, this bulb being connected with a metal manometer which indicates the degree of external pressure on the artery; the indicator, placed on the radial artery below the point of compression, shows the modification of blood pressure caused by that compression; the point of disappearance of pressure indicates the maximum. This instrument, the first to be designed for the purpose, is difficult to handle in spite of its apparent simplicity, and its recording of results is so influenced by personal equation that its employment is rapidly becoming more restricted. Based on the same principle of compression are the method of Riva-Rocci and those derived from it, in which is used a rubber brassard, the moment of disappearance of the pulse at the radial artery being registered. Satisfactory results are thus obtained, mainly because digital palpation is replaced by an oscillating indicator which, as in the methods of Vaquez and Barré, permits very exact measurement of the maximum tension. The Riva-Rocci apparatus also permits study of minimum tension by means of two procedures based on modification of pressure below a compressed point. One of these, called Ehret's method, consists of progressive decompression of a previously distended brassard; the growing amplitude of pulsation is felt by a finger inserted beneath the edge of the brassard. At a certain moment a particular vibration of the pulse is felt; this point past, the pressure rapidly diminishes. The figure read on the manometer at the moment when the amplitude of the brachial pulse begins to diminish is that of minimum pressure. The other method, called that of Korotkow, consists of the same application and inflation of the Riva-Rocci brassard, and of estimation of the sounds made by the passage of the

blood through the brachial artery during decompression. These sounds are noted by means of a simple binaural stethoscope, or of a similar stethoscope in which the end-piece is replaced by a small metal cup at the edge of which is stretched a tense membrane (Laubry's sphygmomanometer). After sufficient education of the ear it becomes possible to recognise the arterial sounds to which the figures of maximum tension correspond, and the cessation of clear arterial sound, to which correspond the figures of minimum tension.

The Oscillometric Method.

Another method, based on Marey's experiments, is that in which measurement is obtained by the study of modifications in blood pressure induced by various known counter-pressures applied by means of a brassard placed as in the methods previously mentioned. This last is a principle absolutely different from that on which the apparatus described above is founded. In England Hill and Barnard had already utilised the oscillations of a manometric needle to measure minimum tension; I myself first described the technique of measurement of maximum and minimum tensions by this method, which I named the "oscillation method." Its advantage lies in the certainty of the physiological data obtainable, and in the knowledge of maximum and minimum tensions and pulse pressure, and (by means of suitable apparatus) of the action of the circulation during application of various known pressures. My "sphygmometroscope," which I invented for the clinical application of this oscillation method, consists of a brassard 17 cm. broad fitted tightly to the arm and connected with a sensitive manometer of a large size, arranged to record by oscillations of a needle the exact size of impulse, irrespective of the degree of counter-pressure on the elastic capsule. Compression is obtained by means of a rubber bulb, which permits counter-pressure between 50 mm. Hg and 300. After application of the brassard the pressure is raised progressively; the needle of the manometer is displaced like the hands of a watch, soon showing slight oscillations which may be ignored. At about 80 mm. Hg, however, in normal cases a sudden sharper and larger oscillation appears, and the figure then indicated on the dial of the manometer is that of the minimum pressure. If compression is continued a zone of large oscillations is observed, followed by diminution of their amplitude and by their final disappearance. The point of their complete extinction is that of maximum tension. The modifications of amplitude can also be studied during progressive decompression after previous establishment of a high counter-pressure. This method, which is used equally with Pachon's sphygmometric oscillometer, presents one considerable inconvenience; in most cases the observer is compelled to fix the maximum tension arbitrarily. Actually, the oscillations of the needle do not appear abruptly; before they become marked there is a zone, sometimes extending over several centimetres, in which small oscillations of practically equal size take place, due, as I have shown, to the circulatory beat at the edge of the brassard in the zone of the limb just above it. To remove all subjectivity from the reading of the result I have modified my earliest apparatus; and at present my "sphygmometroscope" admits of automatically exact measurement of both maximum and minimum tensions.

Apparatus Now in Use.

The apparatus at present in use consists of a leathern brassard 17 cm. wide, lined with two rubber bands, not intercommunicating, but both connected with a compressor and furnished with a delicate manometer of large size. A tap, fitted with a screw, secures it in position, whether inflated or deflated, or half inflated—i.e., the position for record of oscillations—when only the lower band is connected with the manometer. In this way the technique of measurement is rendered rapid and simple. A counter-pressure is first obtained, so that the manometric oscillations have entirely ceased; then decompression is begun, centimetre by centimetre, care being taken to keep the manometer in communication with the lower band only. The highest point at which the slightest oscillation reappears is that of maximum tension, for at that point oscillation can only be due to the blood stream and not to the pressure of blood against the upper edge of the brassard, where there is no counter-pressure. The maximum pressure may thus be read accurately within a millimetre. Minimum pressure is obtained by continuing the decompression; first the oscillations increase, and then are suddenly reduced again; the reading at the latter point gives the minimum pressure.

Consideration of Various Curves.

In this way may be obtained maximum and minimum pressures, pulse pressure, and lastly the oscillometric index, which has recently been applied to clinical work. In this communication only passing reference to its interest can be made; readers are referred to the bibliography. Certain writers have recently attempted to represent by a curve drawn by hand, after examination of the arterial circulation by the oscillatory method, the modifications of the arterial beat shown by the needle, and thereby to establish an oscillometric index and obtain a curve which may be studied at leisure. This curve is generally obtained by taking for abscissa the successive intensities of counter-pressure, and for ordinates the corresponding amplitudes of oscillation of the needle. Harlé (Bordeaux), insisting on the greater interest of a double tracing for purposes of clinical study of the normal and pathological functions of the heart and blood-vessels, has proposed a curve composed of two branches, of which the upper gives the heights reached by the needle above its starting-point, and the lower curve the depths reached below that point. According to Pachon: (1) In the absence of any complicating factor in the artery concerned, the oscillometric index expresses the strength of the cardiac impulse; (2) in the absence of any complication concerning the cardiac impulse, the oscillometric index expresses the vascular calibre—i.e., the state of constriction or relaxation of the arterial vessels. But the clinical application of these data is a very delicate matter, and I only refer to the methods by which they are obtained in order to indicate the direction now taken by research into methods of diagnosis of functional disorders of the cardio-vascular system.

No curve traced by hand can better a direct tracing, and inquiry is now being directed towards the construction of apparatus for graphic expression of the circulation of blood under various counter-pressures. Strohl has made use of a contrivance designed to record the oscillations of a manometric needle under constant conditions and varying pressures, which has enabled him, together with Barré (Strasbourg), to publish curves reproducing the modifications of the arterial beat under the influence of increasing and diminishing counter-pressures, and has provoked interesting discussion on the precise points of fixation of maximum and minimum pressures. But the drawback of this contrivance lies in its clumsiness for clinical use; it is more of a laboratory apparatus. I have now attached to my own sphygmometroscope a recording contrivance; the combined apparatus is neither heavy nor difficult to carry about, and it permits of rapid and accurate registering of variations in the arterial beat, disturbances of rhythm, and maximum and minimum pressure points.

The graphic study rendered possible by means of these apparatus has already roused numerous discussions, notably concerning the points on the curves at which the maximum and minimum pressures are to be recognised. For close consideration of this point, I must refer readers to the works on the subject.

The Study of Hypertension.

The perfecting of apparatus has permitted real and rapid progress to be made in knowledge of hypertension and its consequences. First, definition of

true arterial hypertension has been made possible without danger of confusion with other circulatory states having the appearance of hypertension. Measurement of maximum tension alone, when abnormally high, as in patients with aortic insufficiency, has led to these cases being considered hyperpietic; but the complementary information given by concomitant measurement of minimum tension furnishes an important distinction between pure aortic insufficiency—e.g., in typhoid and rheumatism—and insufficiency due to specific aortitis. In the former class the affected valve no longer opposes during diastole the reflux of blood from the aorta towards the ventricle (this condition is indicated by a diastolic murmur); an abnormal depression of tension in the arterial system at the moment of diastole is the result. There is, then, diastolic hypotension. But as it is necessary to ensure circulation that the blood be impelled from the heart towards the periphery under a certain mean pressure, minimum hypotension must be compensated by an exaggeration of maximum tension; thus in pure aortic insufficiency are found habitual tensions of 170–60, the maximum exceeding the normal maximum of 140 by 30 mm. Hg and the minimum not attaining the normal minimum of 80. In specific aortic insufficiency the pressure readings may appear to be those of pure insufficiency so long as a renal sclerosis has not produced its customary effect of hypertension. At that moment it is not possible to distinguish the nature of the trouble by measurement of tension alone. Only when renal sclerosis has progressed sufficiently does distinction become possible, for at that moment the elevation of minimum tension to the normal level—or above it—indicates the specific nature of the cardiopathy. With the figures 240–100 mm. Hg, for example, specific aortic insufficiency is certainly present, with an already considerable renal lesion. I do not emphasise the fact that the transient hypertension arising by painful crisis in tabes, or that due to excitation of a heart already prodigal of effort, or an excessive tachycardia, can slightly raise the pressure; I prefer to confine my attention to true persistent hypertension.

True Persistent Hypertension.

Two principal factors may modify the pressure: exaggeration of the force of ventricular contraction (maximum hypertension) and exaggeration of resistance to the flow (minimum hypertension). Except in cases where under some transient influence—e.g., emotion—contractile energy is momentarily exaggerated, the maximum tension is only exaggerated to the precise degree necessitated by that elevation of the minimum tension to which it is subordinate. This minimum hypertension can be referred to two mechanisms: (1) The venous congestion which, supervening in advanced phases of valvular affections, cannot be without effect on the flow of blood in the small peripheral arterioles; (2) much more important, the obstruction of these small arterioles. The true hyperpietic subject is one in whom a peripheral spasm raises the minimum tension and renders necessary a maximum tension sufficient to maintain the outward circulation from the centre to the periphery (Amblard). Normally minimum tension is about 70 mm. Hg, and maximum about 130 mm Hg, the various arterial pressures which arise being contained within the limits of 60 mm. Hg. A minimum hypertension of 40 mm., for example, necessitates a maximum hypertension of 100 mm. But various intervening factors (notably the elasticity of the arterial wall, which varies with the causal malady and with functional abnormality) so modify normal functions that the rise of minimum tension is always accompanied by a proportionately larger rise of maximum tension—e.g., a minimum of 120 mm. Hg demands a maximum of from 200 to 220 mm. Hg. If the necessary space between the maximum and minimum figures is maintained, circulation will be ensured under conditions abnormal but relatively satisfactory. The cardiac muscle becomes hypertrophied to perform the extra work imposed upon it by the anatomical or functional defect of the arteries until it slowly or rapidly breaks down. Clinically, hypertension sometimes appears, frequently associated with more or less marked troubles relating to renal insufficiency; but sometimes very careful investigation—qualitative and quantitative—of renal function and of the rhythm of urinary elimination gives no sign indicating disturbance of these functions; arterial hypertension is then the only symptom reported. In the first instance it is easy to connect the hypertension with a renal lesion and to act accordingly (hyperpietic nephritis of Widal); in the second instance it is more difficult to confirm this relation.

Any infection can cause lesions of chronic nephritis and the condition of hypertension. But the latter seems particularly closely allied to the evolution of syphilis (which disease should always be examined for in a hyperpietic patient), apart from several very clear cases where supervening events can be unhesitatingly connected with a recent affection (e.g., scarlatina) frequently complicated by nephritis, or with an evident intoxication (e.g., lead poisoning).

Clinical Divisions of Hyperpietic Subjects.

Clinically, hyperpietic subjects may be divided, from an ætiological standpoint, into several groups, as follows:—

1. Patients, usually young, in whom hypertension follows more or less recent scarlatina or acute infection.
2. Cases of industrial lead poisoning, common in the labouring class, exceptional in other classes.
3. Young hereditary syphilitics, the type of whom is the arterio-sclerotic of about 25 years of age, with hard arterial walls, whose radial arteries "roll" beneath the finger, who have apparently healthy kidneys and an arterial tension of about 170-100 mm. Hg, and in whom arterial hypertension is connected with a sclerosing process resulting from specific hereditary distrophy.
4. Hereditary syphilitics at a later age, when renal lesions at first insignificant have developed; and also other syphilitics, 20 years after their infection, the type of whom is the hyperpietic patient of 45, who admits infection, or denies it deliberately or in good faith.
5. Senile sclerotics, the type of whom is the hypertensive patient of 65 or 70, in whom the hypertension is of mixed origin, being partly functional, due to peripheral arterial spasm, but chiefly connected with senescence of the arterial walls.
6. Other patients in whom syphilis is not detected, who are perhaps sound in that respect, but have gout or diabetes (although in many cases of hypertension during these two diseases syphilis, hereditary or acquired, must be suspected, and only dismissed from possibility after very careful examination).
7. Lastly, patients with transient forms of nephritis of unknown infective origin, in whom the hypertension remains constant for a while, but diminishes with the causal affection.

I consider all permanent hypertension to be of renal origin, and clinical evidence seems to support the contention; the hypertension, at first isolated, has added to it by degrees various disorders, not previously present, of renal insufficiency. When there is no albuminuria, no abnormality of diuretic rhythm, no disorder of renal function, it does not follow that the kidney is anatomically intact; possibly we owe this apparent anomaly to insufficient means of appreciating renal function. In the statistics of Janeway, and in those of Fischer, dealing with post-mortem findings in numerous cases presenting permanent arterial hypertension, the cases showing indubitable renal lesions were very few.

Causation of Hypertension.

It is, however, the possible existence of these cases of isolated hypertension which has permitted Gull and Sutton to attribute to hypertension another cause—namely, hindrance to the flow of blood by generalised arterial lesions, the kidney being ultimately affected, but the morbid condition arising in the arteries. The results of Tripier and Brault seems to run counter to this theory; these writers scarcely recognise the existence of generalised arteriosclerosis, admitting only that of lesions localised in

certain regions. The dependence of arterial hypertension on local and extrarenal arterial trouble, as affirmed by Teissier (Lyons), does not seem to me to be admissible. Lastly, Huchard, who upheld the connexion between hypertension and renal sclerosis, wished to attribute hypertension to a generalised spasm of the peripheral arterioles—a spasm developed under the influence of retention in the organism of vaso-constrictor poisons owing to insufficiency of urinary excretion. If this mechanism is the most probable, the origin of this spasm has not been attributed by all writers on the subject to the same cause. Besides Huchard's theory—which has in its favour results of experience, for in a very general sense the meatless diet leads to a fall of pressure in hyperpietic subjects—other factors have been invoked. The work of Vaquez and Josué, Widal and Boidin, leads readers to think that arterial hypertension can be provoked in subjects presenting no nephritis, and in subjects in whom it has already been found, by suprarenal hyperplasia, and that even in those cases where nephritis is evident hypertension is only brought about by a reaction of the suprarenal capsules. The action on the organism of adrenalin, investigated by Sergent and Léon Bernard, gives a certain probability to this hypothesis. There are, however, two objections to acceptance of this suprarenal origin of hypertension—first, that anatomical lesions are usually found in the cortical region of the gland, since the medullary region is considered to be productive of adrenalin; secondly, that numerous observations have shown the inconstancy of suprarenal hyperplasia in patients suffering from accentuated hypertension, since it was found to exist in other cases where hypertension had never been manifested. Research into the adrenalin content of the blood of hyperpietic subjects has given such contradictory results in this connexion that it is impossible to draw any other conclusion.

Possible Renal Origin of Hypertension.

Is the kidney itself productive of a vaso-constrictor substance, accumulation of which results directly in arterial hypertension? A non-dialysable and hyperpietic substance has been extracted from the cortical layer of the kidney—i.e., renin—which is found in the renal veins, but the results of this research have not been confirmed in practice. The study of cholesterin content in the blood of cases of Bright's disease—which shows a large increase of this substance—has led Chauffard to consider that there may be a connexion between hypertension and the accumulation of cholesterin in the blood, the latter being considered as a defensive element. The presence in the blood of products of the oxypurins—hypoxanthin, xanthin, and uric acid, which are powerfully hyperpietic—may also, according to this writer, originate modifications of pressure. That hypertension may frequently be associated with chloruræmia or with azotæmia is easily understood once we have admitted its essentially renal origin, but it seems to me that it cannot be derived from these two affections; it is frequently met with separately, representing, sometimes at least, a type apart—hyperpietic nephritis—accompanying the two other groups, azotæmic and chloruræmic nephritis.

The Latent Phase of Hypertension.

Recognition of hypertension can only be made possible by systematic research; in an apparently healthy subject the first phase of its evolution is not betrayed by any functional symptom noticeable to the patient himself; this is the "presclerotic" phase of Huchard, the "latent" phase of Gallavardin. There may exist no functional symptom at all, not even dyspnœa—which nearly always dominates the clinical picture at some stage of the condition—or albuminuria, or disorders of urinary elimination. Radioscopic examination, however, often shows slight hypertrophy of the left ventricle, for it is the heart's effort in face of the demand made upon it which permits this phase of latency or compensation. As to the duration of this phase, the possibility of checking it, and the fatal results of the disease, practical difficulties prevent clear answers being given. Most frequently hypertension, when unaccompanied by any appreciable disorder, and only noted by accident, has doubtless existed for some time; in some cases in the course of acute nephritis, the increase of pressure will be rapid; but in chronic nephritis the slowness of development, the possible arrest of progress in the condition, and the absence of knowledge concerning its onset, render it impossible to make even an approximate estimate of the latent phase. As to a return to normal of a pressure constantly raised for some time, although it is never reported after the condition is clearly established and allied with other signs of renal insufficiency, it is difficult to deny its possibility in cases where hyperpietic conditions have been under observation from their onset.

The Phase of Sclerosis.

To this first phase succeeds another, which is often the earliest to be clinically observed—a phase in which other symptoms of a toxic nature are ranged alongside hypertension; this is Huchard's period of sclerosis. To name only affections of the whole circulation, there arise certain aphasias and transitory pareses, epistaxis, retinal hæmorrhage, tinnitus aurium, and dyspnœa, the latter due partly to mechanical hindrance of cardiac function, and partly to intoxication of the subject. The evolution is variable, and the terminal events which arise from toxic troubles only, or from their association with mechanical disturbances, may be determined exclusively by circulatory troubles, and are then manifested by vascular ruptures due to excess of pressure in vessels previously weakened by the causal malady or by cardiac insufficiency.

Myocardial Insufficiency and Pulmonary Œdema.

Insufficiency of the myocardium appears rapidly or slowly; when rapid there is acute œdema of the lung. In a hyperpietic patient, often apparently healthy but generally presenting aortic insufficiency together with hypertension (type of pressures, 250–100 mm. Hg), a rapid series of sequelæ is disclosed by extreme dyspnœa, pain at the apex of the lung, and characteristic salmon-coloured sputum; at the same time peculiar râles indicate rapid serous invasion of the lungs. This is the crisis of acute œdema, which sometimes results in death in several hours or even in a few seconds, before any help can be given to the patient. But if the patient can be brought through the crisis by therapeutic means, amelioration may be obtained, and the pulmonary sequelæ may die down, sometimes disappearing completely. But later, either with no apparent cause, or following a gap in treatment, or some emotion, the disorder will reappear, more or less rapidly—ending in death, or receding into the background again, but always threatening reappearance, and constituting a chronic subacute form of pulmonary œdema. The progress of the arterial pressure explains these various sequelæ. At the moment of appearance of the earliest sequel the pressure becomes rapidly modified. At first there is parallel rise of maximum and minimum pressures. The maximum is raised from one to two points, the minimum from two to three; thus the cardiac effort becomes much greater. Then the state of pressure is suddenly modified—the minimum falling three or four points, but the maximum even more. At this moment death may supervene, if the maximal depression persists. But with appropriate treatment (first bleeding, then cardiac tonics) the modification may be reversed; the minimum will rise one or two degrees, the maximum two or three; and the patient presents for a time pressures of maximum 180 and minimum 100 mm. Hg. Amelioration becoming more pronounced, the maximum tension may rise again, but never to the figure recorded before the crisis. Then it will once more fall rapidly, perhaps to rise no more, perhaps again to rise a few degrees; by a series of weakening changes it may come about that

the pressure is not compatible even with very defective function of the vascular system, and the patient dies of progressive asphyxiation.

In other cases the heart fails slowly, with a terminal phase of progressive weakening of maximum pressure, whilst the minimum pressure remains at a sufficiently high level on account of the spasmodic toxic element which previously necessitated its elevation, and of the disorder induced in the peripheral flow by venous congestion associated with dilatation of the cavities on the right side of the heart. This failure is marked by an important auscultatory sign—i.e., presystolic gallop—and by modifications of the pressure curves during routine exercises, which were used, notably during the war, to record the coefficient of myocardial resistance to effort in soldiers undergoing examination. When the heart is beginning to tire, and can scarcely continue to perform the work entailed by persistent hypertension, the maximum and minimum pressures rise, but the elevation of maximum is not what it should be, because of ventricular deficiency; the necessary effort is made through a rapid and considerable increase of pulse-rate. Signs of circulatory trouble (œdema of the limbs, hepatic and pulmonary visceral stases, ascites) habitual in valvular patients correspond, in the last phase of arteriosclerosis, to these disorders of pressure.

Importance of Recording Pressures.

The possibility of recording hypertension when the condition apparently exists alone and only displays a slight degree of renal insufficiency makes of the pressure reading a clinical sign of capital importance, since it permits treatment of nephritis from its onset, before it has been manifested by any trouble otherwise appreciable. At this stage modifications of diet and certain drugs have more chance of slowing down the process of sclerosis; arterial hypertension is in this case an important danger-signal—its mere appearance proving an apparently completely healthy subject to have already received serious damage. As regards prognosis, hypertension seems to assume a degree of gravity in accordance with the age of the subject. In the aged, where the sclerotic and atheromatous process is long established and where renal insufficiency often exists, hypertension does not seem so important as in younger subjects. By the latter are meant patients of 45, in whom the symptom is always serious, and sometimes very serious. Although the gravity of very high figures cannot be denied in a general sense, the degree of maximum hypertension does not exactly indicate the patient's danger. The relation between maximum and minimum is more important in this respect, and the pulse pressure, which shows the functional value of the left ventricle. As the minimum pressure is raised, the maximum pressure is also raised—for reasons which cannot be detailed in this short study—but to a greater extent.

Treatment of Hypertension.

In spite of the knowledge recently acquired concerning the pathogenesis of hypertension, the secretion of hyperpietic renal substances, and the excess in the blood of adrenalin, cholesterin, or uric acid, therapeutic progress has not been remarkable. Whatever may be the starting point, the essential cause, of excess of pressure, it appears that a slow progressive thickening of the kidney necessitates a continuous and progressive exaggeration of arterial tension in order to ensure satisfactory urinary depuration. The excess of minimum pressure, due to peripheral spasm, only exists to the degree in which it is useful, and the excess of maximum pressure only to the degree rendered indispensable by the elevation of minimum pressure. It would be illogical to attempt directly to lower the maximum pressure, for such a lowering would only express the insufficiency of myocardial effort to perform an indispensable supplementary task. What must be aimed at is the lowering of maximum pressure by removal of its cause—i.e., the elevation of the minimum pressure. The latter is due to toxic disorder; as Huchard has constantly pointed out, the treatment of arterial hypertension resolves itself into treatment of organic intoxication by decreasing the supply of toxin with an appropriate dietary régime, and by facilitating the removal of endogenous toxins by stimulation of normal functions of intestinal, renal, and cutaneous elimination.

With the exception of certain cases in which sudden pressure arises during habitual hypertension and necessitates urgent methods (bleeding, cupping by scarification, use of amyl nitrite, sodium nitrite, erythrol tetranitrate, &c.), the treatment of hypertension is lengthy. Together with antitoxic measures, treatment of the arterial walls is attempted; potassium iodide has been used with success, although the mechanism of its action remains unexplained. At the same time direct attempts to reduce pressure may be cautiously initiated; the Royat baths are indicated as inducing a lowering of pressure. Bubbly and thermo-electric baths, particularly the latter, have also a violent effect upon circulation; their administration should be carefully supervised, and since the effect produced is rapid but transitory, they can only be considered as an adjuvant form of treatment. Electric treatment with high-frequency currents is also an adjuvant, having no clearly perceptible effect on hypertension, but being of use in the restoration of sleep and diminution of nervous troubles associated with hypertension in irritable patients.

It must be borne in mind that the condition begins, has its continuation, and ends through intoxication (Huchard); a diet as little toxic as possible is therefore indicated. Milk, cream, butter, fresh cheese, well-ripened fruit, and vegetable soups form the basis of treatment. It cannot be too often emphasised that only by continuous adherence to the alimentary régime can a marked and lasting lowering of pressure be obtained. Only small quantities of salt must be permitted, less on account of the disputable hyperpietic action of sodium than on account of knowledge of the nephritic origin of hypertension and the fear of more or less latent chloruria.

Although the absorption of meat seems in some hyperpietic patients to have no effect on the pressure figures, it is nevertheless certain that in the majority of cases the dropping of meat diet is accompanied by a diminution in those figures, together with disappearance of toxic troubles accompanying pressure, notably dyspnœa and headache. Although a continued milk, or milk and vegetable, diet may often be unacceptable to the patient, and although in some cases it may even be impossible to overcome individual intolerance to it, there is at present no other means of maintaining a lowered pressure. Intestinal stasis is combated with frequent purgatives, and diuresis is ensured by the use of theobromine; the former difficulty of the insolubility of this very active medicament has been overcome by utilisation of a new composition sufficiently soluble even for subcutaneous injection. To various diuretic preparations may be added tisanes of couch-grass, cherry stalks, and maize. A few doses are sufficient.

In conjunction with these methods of securing diuresis it is necessary to prescribe a diuretic mineral-water cure at Vittel or Evian; the waters at Vittel are more active, being cholagogue and laxative as well as strongly diuretic. Diuretic cures cannot be satisfactorily carried out except in these spas. There is no doubt that the ingestion of large quantities of water augments œdema or raises the arterial pressure. It can be affirmed, in accordance with the views of specialists in these treatments, that, far from augmenting the quantity of water retained in the system, the diuretic cures—however paradoxical the statement may seem—are essentially dehydrant cures; the dechloridising action of the Vittel waters also contributes to the explanation.

In conclusion, the foregoing has shown that if the diuretic cures almost always provoke hypotension on rational lines, this is only one of their many advantages; the disappearance of other signs of intoxication, when the latter are present, affords a proof of the fact.

THE LANCET.

LONDON: SATURDAY, OCTOBER 8, 1921.

Health Insurance and the State.

A DISQUIETING feature of the economy campaign is the indiscriminate use of the knife, the cutting down of all expenditure whether productive or not. Expenditure on the Ministry of Health cannot be regarded as wasteful, seeing that it is intended to create and supply what the former head of one of the fighting services once characterised as the munitions of life. National Health Insurance is described in the preamble to the Acts as designed to provide for Insurance against loss of Health and for the Prevention and Cure of Sickness. No one now disputes that preventive medicine must be linked to clinical medicine for any real progress to be made in public health administration, and with the medical service set up by the Insurance Acts a real start has been made in bringing the general practitioner into the orbit of the Ministry of Health. Those who talk of abolishing National Health Insurance and getting rid of medical benefit also talk no less glibly of decontrolling the doctors. But the control of which they speak is really coöperation: coöperation which raises the standard of medical work and gives new ideals to general practice. Decontrol would spell not liberty but disorder. Medical benefit, as yet in its infancy, is now limited to what is known as general practitioner services, but the demand is steadily growing for further provision such as prompt hospital treatment, including major operations and the advice of specialists.

During the week the attitude of important medical groups has been made known. The executive of the Federation of Medical and Allied Societies has addressed a letter to the Minister of Health asking on reasoned grounds for a careful inquiry into the present working of health insurance before departmental action is taken. The Insurance Acts were an experiment in public health administration, for the success of which no sufficient data have yet been offered. The letter of the Federation refers to the criticisms levelled alike at the methods of the Health Ministry, the administration of the approved societies, and the services of the insurance practitioners: criticisms which may be ill enough informed and yet incapable of being refuted in the absence of exact information. Another gathering of 250 medical men at Birmingham, on Friday of last week, after listening to an address by Dr. ALFRED COX, medical secretary of the British Medical Association, passed a resolution to the following effect: That where it is necessary to organise or provide a general practitioners' service for any section of the community unable to pay the ordinary fees, such service is best given on the lines of the present panel system, and this meeting *does* wish medical benefit under the National Health Insurance Act to continue, so long as the conditions are such as will allow of a good service being given. Dr. COX had logically set out the six ways by which medical attendance could be ensured for persons unable to provide it for themselves. Such provision might be made (1) by ensuring that every person willing to work should be paid wages enabling him to provide his own medical attendance by private arrangement; (2) by voluntary charity; (3) by the Poor-law; (4) by the club system; (5) by a whole-time State service open to everybody; (6) by a contributory insurance service. Alternatives 1 to 3 he eliminated at sight. Should contributory insurance be abolished, an alternative would doubtless be to resuscitate and develop the old discredited club system. How unsatisfactory that system was a generation ago is set forth briefly in an article on page 775. Dr. COX roundly stated that apart from a whole-time State service he could see no practicable alternative to the present system of contributory health insurance. Of this system the fundamental principles were that every doctor had the right to take part in it; that every patient had the right to choose his doctor, and every doctor except in one-man areas to get rid of any patient; that the remuneration was fixed by central bargaining and was the same all over the country; and that doctors collectively had a great deal of control through the panel committees over their part of the system.

The Minister of Health has now formally notified insurance practitioners that after the end of the calendar year a reduction ought to be made in the present capitation fee of 11*s*. The amount of the proposed reduction has not yet been stated, nor have any grounds been given for setting aside the decision of the arbitrators in March of last year; but there is a risk that any reduction in the capitation fee will be countered on the part of the doctors by a reduction in the quality of their service. At all events, in the words of the Federation's letter, any reduction before full inquiry has been made into past results and future requirements would tend to alienate the goodwill of those practitioners whose coöperation is essential to the success of the service. What we fear is that great numbers of practitioners who have small panels as part of large general practices may resign from the panel when the reduction becomes operative. And it is just the practitioner of experience in good-class practice whose coöperation the State cannot afford to lose. Whatever the ideals of the insurance practitioner—and with few exceptions they are high ideals—the quality of work done must depend ultimately upon the conditions under which service is given. The insistent demand on the part of approved societies is for smaller panels and stricter limitation of lists. A serious reduction in the capitation fee will make this more difficult to secure. With a smaller fee it will be necessary for the practitioner to have a larger list in order to enable him to devote himself to his insurance work. Improve the conditions of panel practice, provide the necessary facilities, and the quality of the service can be guaranteed. It would be futile economy to drive out the best men by reducing the remuneration. The annual Panel Conference, which meets in London on Oct. 20th, is to be asked to reaffirm its opinion that 13*s*. 6*d*. is the lowest capitation fee that should be offered for an effective service, while not pressing at present for any increase on the 11*s*. in view of the serious state of the national finances.

Respiratory Efficiency.

IN his Milroy Lectures on Respiratory Efficiency in Relation to Health and Disease, of which the conclusion appears in the present issue, Wing Commander MARTIN FLACK has raised the question of physical efficiency tests and the value of special physical training. The results of his investigations in the Royal Air Force Medical Service are valuable contributions to physiological knowledge on a subject of great practical importance; they have a bearing, too, upon the value of gymnastic exercises as compared with out-door games and sport, a matter in which the medical man takes a personal as well as a professional interest. Dr. FLACK's evidence proves that success in respiratory tests connotes general good health and failure to reach a certain standard is evidence of unfitness. But granted that respiratory efficiency is a good test of physical fitness, little evidence has yet been adduced in favour of the view that respiratory exercises, as such, will result in physical efficiency. In the past the Services have produced strong advocates of this view. The expanded pouter-pigeon type of chest has disappeared, to be followed by the Swedish system of physical training embodying so-called breathing exercises, and it is noteworthy that a physiologist of the standing of Dr. FLACK should have elaborated a system of ten exercises which, with one exception, are modified breathing exercises. Their author assures us that they are in no way designed to supplant recreational exercise nor to replace more elaborate systems of physical training, but in regard to the latter, Dr. FLACK is assured that the exercises will give the correct circulatory and respiratory efficiency.

Examination of respiratory efficiency in animals and man shows that the living organism must be considered as a whole. If life arises from life, there is no beginning of respiration; the so-called tissue respiration of the ovum and spermatozoon passes into the respiration of the embryo and fœtus, and the change from placental to pulmonary respiration at birth has been foreshadowed by the movement of the diaphragm and other respiratory muscles, which can be observed during fœtal life. The new-born infant breathes through its nose, for otherwise it could not suck, and respiratory efficiency is a natural result of the increasing demands of an actively growing body. In a similar way the young child or animal needs no special training of its respiratory system; it develops its heart and lungs in response to the great muscular activity of play, which is a characteristic of the young. Athletes, horses, and dogs are trained by progressive muscular exercise, and the teaching of trainers has been often in advance of scientific knowledge, or more correctly stated, their knowledge based upon experience has not been regarded as scientific. We have a right to ask the physiologist what is the true basis for the so-called breathing exercises; there is no apparent reason for taking in more oxygen than the body needs or for discharging an undue amount of carbon dioxide. Unless there is increased oxidation produced by muscular work, the body compensates for forced breathing by a subsequent period of decreased breathing or apnœa. The expansion of the apices of the lungs does not in itself protect against tuberculosis, although progressive muscular work in the open air, by increasing the metabolism, can raise the resistance.

The contest between the advocates of thoracic and of abdominal breathing has not been fruitful of practical result; the healthy body has a way of using the method which the occasion demands. The young boy with mobile chest and thoracic breathing at rest throws into powerful activity his diaphragm directly he runs and needs a greater ventilation of his lungs. Muscular exercise either in the form of work or sport has abolished tight-lacing in women for a similar imperative reason. If the man or woman be engaged in manual labour requiring the fixation of the shoulder-girdle, the chest becomes less mobile and the relative rigidity of the thorax is an advantage. What is the place of respiratory exercises we do not know; they may be justified in special cases of disease, but only the sick need the physician. Biological knowledge agrees with the experience of the trainers of athletes, horses, and dogs, that efficiency is best obtained by progressive muscular exercise, by learning to perform work well by doing it. Out-door work, games, and sport may be expected to give better results than the set exercises of the gymnasium.

The Opening of the Session.

A GOOD send-off, with friends on the quay and a message of greeting and advice from an experienced traveller who has not forgotten his own first voyage, is encouraging to one embarking on such a long and arduous pilgrimage as a medical career, and it is matter for regret that some of the more important schools in the metropolis should have discontinued a formal opening function. The student listens to addresses with diminishing eagerness as he grows more self-reliant; to the experienced worker a lecture is apt to convey less information in a given time than a book. But on his first day the scholar arrives with keen appetite, and a savoury hors d'œuvre may materially affect his appreciation of the solid five or six course dinner which he will have not only to eat but inwardly to digest.

The two addresses which we abstract on p. 771 were excellent examples of their kind. The selection of a medical school, whether dictated mainly by athletics, geographical convenience, examination successes, or family tradition, is to many students a harassing business. Others, a place in the school of their choice having been forbidden them, may start their career disappointed and vaguely suspicious of the school to which they have become attached as a second-best. Dr. A. ABRAHAMS discussed what was to his hearers a burning and topical question, and while the advantages of a big school were explained fairly, the compensations to be found in a smaller one were so convincingly set forth that the Westminster students at least must have come away full of cheer and loyalty to their new school. Dr. LOUISA MARTINDALE was equally helpful on different lines; she laid down certain guiding principles which the woman student will find the more convincing in that some at least will accord with her inclinations. Dr. MARTINDALE's survey of medical work was wide and her conclusions inspiriting—though to those who are still laywomen the acknowledged ignorance of even senior practitioners may seem depressing. The time for her hearers to recall these words will be the inevitable period of self-sufficiency that follows qualification, and especially the first resident appointment. Medical teaching has lost the pseudo-scientific arrogance of the latter part of the nineteenth century, has become more humble and less didactic, even in hospitals. And in the five years or more before the new students reach maturity as practitioners, we may hope that the efforts now being made to bridge the gap between hospital teaching and the difficulties of general practice may have borne fruit.

Annotations.

"Ne quid nimis."

THE GROWTH OF MEDICINE IN CHINA.

LAST month the building of the Union Medical College was completed in Peking. Chinese in external appearance, entirely Western in equipment and internal arrangement, the first great medical school of the Eastern republic is worthy of its purpose and of the generosity of the Rockefeller Foundation which built and endowed it. Some 80 students entered the medical course for the academic year 1920–21, and the numbers can now be largely increased, for there are 90 professors and teachers on the staff. But it is one thing, as the *Review* of the Foundation remarks, to give Chinese men and women a modern medical training; quite another to provide the conditions under which that training can be of largest service to Chinese communities. The chief agency for helping the native practitioner is the Western type of hospital, which aids him in maintaining his ideals and helps to disseminate in the community knowledge of the aims of curative and preventive medicine. These hospitals are for the most part under missionary auspices, and the story of the development of medical missions in China is ably told by Dr. Harold Balme, dean of the school of medicine in the Shantung Christian University at Tsinan, in his book on China and Modern Medicine. (London: United Council for Missionary Education. Pp. 224. Price 5*s*.) A hundred years ago, as Sir Donald MacAlister points out in his prefatory remarks, no human enterprise could have seemed more hopeless than the physical and spiritual transformation of China. Until a few years ago every occasion of discontent was accompanied by an outburst of anti-foreign feeling, frequently ending in bloodshed, whereas to-day political revolutions are invariably accompanied by proclamations holding the foreigner's life and property of the foreigner inviolate. This has been brought about in the main by the civilising influence of medical missions and the substitution of Western scientific ideas for superstitious Chinese methods. The pioneer of this work was Thomas Richardson Colledge, who founded the first voluntary hospital in China—the Ophthalmic Hospital at Macao—nearly a century ago. Much still remains to be done, and Dr. Balme asks that English and American doctors should visit the hospitals of China and acquaint themselves at first hand with the conditions of life and medical practice there. He very rightly demands the provision of better facilities in Western hospitals and laboratories for the post-graduate study by Chinese medical men and women. China offers special opportunities of medical research, for many pathological conditions occurring there are seldom found elsewhere, and disorders which are common to all lands are seen there in aggravated form owing to long years of neglect. We print on another page the substance of an address on medical missions in China delivered by Dr. Balme during a recent visit to this country.

MORE RADIUM.

A LARGE consignment of radium amounting to about 2 g. of the element has reached this country from the Czecho-Slovak State mines. The mines in question are those at Joachimsthal, from which radium was first separated by the labours of Prof. P. and Mme. Curie. The consignment, which arrived under the personal supervision of Prof. F. Soddy and Mr. Shepperson Wilson, is but the first of supplies which are expected to come for some years from the Radium Corporation of Czecho-Slovakia, whose offices are registered in Prague. This is the result of negotiations with the Imperial and Foreign Corporation of London. It is the intention of the latter body to arrange for supplies of radium to be devoted to the dual services of medicine and of science. Prof. Soddy, who is expert adviser to the Corporation, will be controller of such part of the radium as may be installed in laboratories at Oxford. Further than this, directional offices, possibly developing into an institute, will be set up in London, whereby the aims of the scheme may be secured. If facilities on a large scale are to be provided for the medical use of radium, it is obvious that this should be done in no indiscriminate manner, and the whole of these arrangements will be under medical direction. At the present time a scheme of investigation in radium therapy at various recognised centres in the British Isles has been put into operation by the Medical Research Council and valuable results are anticipated from this coördinated effort. It is safe to predict that further facilities for the use of radium will have an important effect in developing our knowledge upon its uses in disease, provided that these facilities are made the most of. The subject has, happily, passed the stage at which valuable results are looked for from haphazard methods, and it is no disrespect to individual enterprise to state that the interests of radium treatment are now best served by coördinated effort on the part of physicians, surgeons, radiologists, and pathologists. To what extent the needs of medical research, as well as medical practice, are to be served by the new radium service in question we have no positive information, but we trust that such a vital need will be kept well in mind.

HOSPITALISM IN INFANTS.

THE question of the prevention of hospitalism among children in creches has recently been discussed by Dr. Eduard Friedberg[1] of the University Children's Clinic in Freiburg, a particularly favourable opportunity for the study of the question having presented itself in the reorganisation at the end of 1919 of the St. Hedwighaus creche attached to the clinic. During the year 1919, out of the 139 children cared for in the creche, 29 died (22 in the clinic attached and seven in the creche itself), the mortality thus amounting to 20·8 per cent., and exceeding the death-rate in the Düsseldorf hospital, recently published by Schlossmann and favourably commented on, of 17·3 per cent. Dr. Friedberg appends a table showing that the morbidity and mortality rate was greatest in the case of the youngest babies (up to 3 months of age), half of whom had to be sent to the clinic for various forms of serious illness, and 40 per cent. of whom died. The older children came off better, but even in them careful examination brought out the fact that a large proportion showed signs of hospitalism in the form of poor mental and physical development, and even of rickets. This particular year having been unusually free from epidemic disease, including influenza, the medical care of the home adequate and the food good, the high morbidity and mortality rate could only be attributed to the cramped space and consequent overcrowding in the home and to the defective training of the nurses employed. At the end of 1919 an extension of the premises was effected and the creche completely reorganised, among the changes carried out being the setting apart of special wards for slightly infectious cases, as well as for the temporary accommodation of more serious cases pending their removal to hospital; the establishment of a quarantine block for new arrivals; and a careful classification of the children according to age, by which means special care could be lavished on the younger ones, and the more experienced nurses detailed to look after them. The minimum distance between the beds was rigidly fixed at a metre and a half, thus limiting the number of cases admitted; another regulation being that visitors who were restricted to two afternoons a week saw the children

[1] Deutsche Medizinische Wochenschrift, Sept. 1st.

in a special room. In short, this home for healthy children was conducted as far as possible on the lines prevailing in babies' hospitals, the statistics the following year affording striking proof of the value of the new arrangements. The total mortality rate fell from 20·8 to 6·8, while that among infants in the first three months of life fell from 40 to 7·6 per cent. The number of infants sent to the clinic on account of serious illness was reduced from 20 to 5; a gradual and steady increase in weight was the almost invariable rule, and the last traces of hospitalism among the inmates vanished.

DR. WALFORD'S RETIREMENT.

THE city of Cardiff in 1888, now nearly 34 years ago, appointed its first whole-time medical officer of health in the person of Dr. Edward Walford, who had already gained experience in public health administration at Ramsgate. Some estimate of the importance of the work Dr. Walford has carried out in this long period may be gathered from the fact that when he took office the population of the city was about 82,000. It is now over 200,000; during the period the water-supply of the town has been reorganised with, as a consequence, the entire disappearance of enteric fever; a scheme for isolating cases of infectious disease has been perfected with the establishment of the City Infectious Diseases Hospital, while the death-rate of the town, which in 1890 was 21·6, has fallen to a figure of 11·3 at the present time. Dr. Walford has not been allowed to leave the district and retire to live at Walmer without receiving recognition of the signal services he has rendered. On Sept. 24th a special meeting of the Welsh Branch of the Society of Medical Officers of Health, of which he had been president, was held, with Dr. Llewellyn Williams (Welsh Ministry of Health) in the chair. The new president, Dr. Howard Jones (Newport), on behalf of the branch, presented to Dr. Walford as a token of the esteem felt for him by the society a Kew standard barometer and a pair of Zeiss field-glasses. This occasion was not the only one on which Dr. Walford's friends and colleagues gathered to do him honour, for a gathering of over 40 medical men entertained him at a banquet on Sept. 28th, and a further and more intimate reunion took place on Sept. 29th at the City Hall, when Dr. Walford's immediate colleagues, along with present and past members on the staff of the public health department, met to present him with a bureau. Dr. Walford's career is a welcome reminder that it is within the competence of a sanitary officer to administer efficiently without forfeiting the affection and esteem of colleagues in clinical practice.

THE WASSERMANN REACTION IN CONGENITAL SYPHILIS.

IN the course of a recent discussion at the Royal Society of Medicine on the diagnosis and treatment of congenital syphilis, Dr. H. Morley Fletcher stated, with fairly general approval, that the problem of the Wassermann reaction was not capable of solution by the clinician, but must be left to the laboratory worker for much further investigation. Other views are also current. Dr. E. Crawford and Dr. G. B. Fleming published in our last issue some additional laboratory findings on the power of certain drugs to convert the Wassermann reaction from positive to negative in cases of congenital syphilis. The authors seem to imply that this deflection of complement constitutes the crucial test of the efficacy of treatment, and that the amelioration of symptoms is of less importance. Thus they found that in a series of 12 children over 1 year of age they were unable to convert the positive Wassermann reaction to negative by means of the drug sulfarsenol administered intramuscularly, although Dr. Leonard Findlay, in his series of 20 children over 1 year of age exhibiting a positive Wassermann reaction, had, by means of intravenous injection of salvarsan or kharsivan, obtained a negative reaction in 50 per cent. of cases. It is, therefore, argued that intramuscular sulfarsenol is not so effective in the cure of congenital syphilis as is intravenous kharsivan. An observation of Mr. J. E. R. McDonagh's, adduced by him at the meeting already mentioned, throws new light on the value of complement-fixation tests in discerning the presence of syphilis in children. He found that in children born of treated syphilitic mothers the Wassermann reaction was, as a rule, negative and might remain so for some years, until clinical manifestations occurred. If the reaction then became positive for the first time at about the age of 3 years, it remained so despite treatment for the rest of the patient's life. Further, when the Wassermann reaction was positive during the first few months of life, even if the child was left untreated, the reaction tended to become negative about the age of puberty. As Dr. Crawford and Dr. Fleming did not give details of their series of children over 1 year of age, it is impossible to say whether or not they fall into the group of cases described by Mr. McDonagh, in which the Wassermann reaction becomes positive a few years after birth, and cannot be influenced by treatment. Should this be so, it is clear that the Wassermann reaction could not be considered as the crucial test of the potency of the drug sulfarsenol to cure congenital syphilis, and that the clinical symptoms must receive due recognition. Such doubts and difficulties are apt to occur whenever laboratory findings are divorced from clinical observations. Thus the absence of tubercle bacilli from the sputum does not prove that pulmonary tuberculosis is non-existent, and bacilli may be found without activity of the disease. The X ray shadows cast by tuberculous pulmonary lesions may be indistinguishable from those due to other pathological conditions. A positive Widal reaction does not necessarily indicate an active infection with the typhoid bacillus. Clinical and laboratory findings are two aspects of a picture, each of which is essential to give it any claim to reality.

CONGENITAL ATRESIA OF THE PUNCTA LACRYMALIA.

Dr. Harry Gradle,[1] of Chicago, who records an illustrative case, remarks that though congenital closure of the conjunctival openings of the lacrymal canals is supposed to be fairly common, comparatively few cases have actually been reported. In Graefe-Saemisch's "Handbuch," von Hippel states that atresia of the puncta with patent canaliculi and normal relations of the remainder of the tear passage has been described, the resultant epiphora being easily relieved by simple puncture of the epithelial covering. Examples of congenital atresia of one or more puncta have been reported by Ferron, Nielsen, Labegne, Bernhardt, and Webster Fox, amongst others. The last-named writer's case is of interest on account of the absence of epiphora for more than 20 years in spite of complete congenital absence of both puncta. The condition is not serious. In the treatment as little as possible should be done consistent with the restoration of function, and slitting of the canaliculi is quite unnecessary. The case reported by Dr. Gradle occurred in a nurse, aged 21, who had suffered from continuous lacrymation of the left eye as long as she could remember. There was no discharge from the eye, and lacrymation was only excessive under very irritating conditions of wind and weather. Examination showed that the right eye was normal in every respect, but that the openings of the puncta lacrymalia of the left eye, which were normally situated, were covered with a thin layer of epithelium. A cure was effected by breaking through the epithelial covering with the point of a Graefe knife, inserting a punctum dilator, and performing lavage into the nose both from the upper and lower puncta.

[1] Archives of Ophthalmology, July, 1921.

ACOUSTIC EXERCISES FOR DEAF-MUTES.

A PAPER, posthumously published, by the late Prof. Victor Urbantschitsch[1] of Vienna, whose death we recorded in our issue of July 16th, gives an interesting account of some of the results achieved by the systematic use of acoustic exercises in a large number of deaf-mute pupils at the Israelitic Deaf Institute in Vienna. It has been found on careful examination that in a surprisingly high percentage of cases believed to be totally deaf considerable residual hearing exists; this may, perhaps, be partly explained by a confusion between an inability to understand what is heard and an inability to hear. The acoustic exercises are begun by the repetition of individual vowels, called into the ear, the first vowels used being generally *a* and *o*, and the other vowel sounds being added by degrees. Words easily understood, such as *Mama*, *Papa*, *Auge*, *Nase*, are spoken slowly and in a sustained voice, the pupil, who is told in advance which word will be used, having to repeat the practice-word in order that wrong hearing impressions may be corrected. The words have in every case to be acoustically memorised. It is important that in the earliest stages the pupil should be trained by the same teacher, later on different voices being used. Practice with musical tones (harmonica, piano, wind and string instruments) to acquire pitch and to recognise melody are important. Prof. Urbantschitsch pointed out that the hearing perception in deaf-mutes is subject to much fluctuation, especially in the earlier stages, and perseverance is needed in spite of apparently discouraging results. "Acoustic-fag" is liable to occur and is a warning to limit the exercises, five- to ten-minute periods several times a day usually being enough in view of the intense degree of concentration needed on the part of the deaf pupil. Emphasis is laid upon the fact that even the acquisition of vowel perception in a pupil who has never heard is well worth while, this resulting in the modification of the normal toneless unmodulated voice of the deaf-mute.

In a much longer and more elaborate paper[2] Dr. Max A. Goldstein develops this theme, paying warm tribute to the work of the late Prof. Urbantschitsch, whom he describes as "perhaps the only one who has persisted in his training of the profoundly or totally deaf child by the acoustic method." After giving a brief review of the literature of this subject, and a classification of nerve-deafness into five groups—each group representing a different pathological process—Dr. Goldstein describes in detail his own application of the acoustic method, this being divided into passive and active education. Much use is made of sound comparison, which, as the writer points out, is a logical form of stimulation, awakening a mental differentiation in the brain as well as a physiological selective differentiation in the organ of Corti. A brief history of six illustrative cases is given, including instances of congenital deaf-mutism, marked improvement being shown in every case after two years of training.

[1] The Laryngoscope, July, 1921.
[2] Ibid.

JUBILEE OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

THE American Public Health Association will hold its "semi-centennial" celebrations in New York from Nov. 8th to 18th. The scientific convention, to be held from the 14th to the 18th, will be divided into sections of laboratory work, vital statistics, public health administration, sanitary engineering, industrial hygiene, and food and drugs, with special programmes dealing with child hygiene, health education and publicity. Prior to the convention proper there will be demonstrations of the various types of public health activity in New York and its environs—the health department bureau, laboratories, health centres, clinics, and hospitals—in order that the health services may be seen in actual operation, especially those admitting of duplication in other cities. Dr. Stephen Smith, the founder and first president of the Association, is now in his 99th year; he will be the guest of honour at a banquet to celebrate his approaching centenary and the jubilee of the Association. At the beginning of October a historical jubilee volume entitled "Fifty Years of Public Health" will be published, with an introductory description of the earlier beginnings of the science. Detailed announcements and programmes will appear from time to time in the *American Journal of Public Health* and the *News Letter* of the Association, or may be had upon addressing the Association at 370, Seventh-avenue, New York city.

SPASM OF THE CENTRAL ARTERY OF THE RETINA.

OF the various causes of obstruction to the blood-flow in the central artery of the retina, spasm of the muscular wall of the artery is one of the rarest; indeed, some authorities have doubted whether it actually occurs. Ophthalmoscopic evidence on the point must be received with caution, since the apparently visible contraction of the artery or one of its branches, rapidly changing to a normal appearance and synchronising with an obscuration of vision in the affected eye, is a condition which might conceivably be caused by variations in general blood pressure where the inner lining of the arterial wall is so thickened by disease that the usual pressure of the blood from behind is only just sufficient to overcome what amounts to a partial obstruction. Some of the cases of obstruction from spasm which have been reported have probably been of this nature, but others, occurring in patients otherwise in good health, will hardly bear any other interpretation than that of actual spasm. So long ago as 1894 the late Mr. A. K. Benson, of Dublin, put on record one such case where an interruption in the blood column was observed repeatedly to move along the inferior temporal artery towards the periphery of the fundus as far as its bifurcation, and then cease. In 1906 R. A. Lundie recorded a case where the contraction occurred in a single branch, and was stationary until the condition of spasm passed off, the apparent contraction then disappearing. Other cases again have been reported where all the vessels have been observed gradually to diminish in calibre, and after a time to refill, the condition being in some cases accompanied by the œdematous retina and cherry-red spot at the macula, typical of embolism or obstruction of the central artery from any other cause. The most recent case is one reported by A. B. Bruner in the *American Journal of Ophthalmology* for July. A man of 34 had several attacks of loss of vision in one eye lasting for a few minutes. He was seen on the day when the attacks first occurred. Between them nothing abnormal was found ophthalmoscopically, but during them the fundus of the affected (left) eye showed the following striking picture:—

> The nerve and retina decidedly paler than in the right eye; the arteries are all markedly contracted, appearing as mere threads; the veins show entire cessation of blood-flow, the regular venous pulse ceasing entirely; the blood in the veins assumes a granular appearance due to the breaking up of the normal blood-column; in from one to three minutes the flow of blood in the veins recommences, at first slowly, then more rapidly, the venous pulse reappears, the arteries assume their normal calibre and appearance, and vision rapidly returns to normal. During the time of the attack no red spot was seen at the macula.

The attacks continued to occur for five days, during which they were observed with no variation of the ophthalmoscopic picture. At the end of that time they ceased spontaneously, and did not recur. No cause of the onset could be discovered by general examination of the patient, unless an alveolar abscess might be considered such, though, as the affected tooth was immediately extracted and the attacks

of obscure vision continued for five days, this does not seem particularly probable. From the available evidence it would appear that arterial spasm may in rare cases affect the retina as in Raynaud's disease it affects the extremities, that the attacks of obscuration of vision so caused may be completely recovered from, but may, on the other hand, if the condition is sufficiently prolonged, cause blindness in the affected eye. The causation of the condition remains obscure.

OVARIAN HÆMORRHAGE APART FROM ECTOPIC GESTATION.

IN a recent paper read before the Section of Obstetrics, Gynecology, and Abdominal Surgery of the American Medical Association, Dr. Edward A. Schumann[1] of Philadelphia discussed hæmorrhages of ovarian or tubal origin not associated with ectopic pregnancy. Pre-operative diagnosis is rarely possible except in cases in which the patient is undoubtedly a virgin. The clinical picture is that characteristic of sudden intraperitoneal hæmorrhage, variable in amount and usually accompanied by acute pain in one or other iliac fossa, although in a few cases initial acute pain may be entirely absent. Some distension usually supervenes with signs of shock and severe loss of blood, or there may be a sthenic reaction with rise of temperature, moderate leucocytosis, rectus rigidity, and the syndrome of the "acute abdomen." Dr. Schumann described a group of cases fairly common in growing girls, who during one of their early menstrual periods show all the symptoms of intraperitoneal hæmorrhage. He considers that such cases, of which he relates a typical example, are not uncommon and rarely end fatally even without surgical intervention. The hæmorrhage in these cases is probably due to an excess of bleeding from the wall of the mature Graafian follicle in the adolescent ovary without any demonstrable morphological change in the tissues. In this group of cases a pre-operative diagnosis may be hazarded, whereas in the more or less severe hæmorrhage which takes place from the ovary of mature women in whom ectopic pregnancy is a possibility, the diagnosis is extremely difficult. Three types of ovarian hæmorrhage have been described by Wolf—namely, interstitial, follicular and intra-follicular—all of which may occur in the same ovary. Whether a sclerocystic degeneration or a true fibrosis is the cause of the hæmorrhage is a matter of conjecture. Dr. Schumann reports a case of massive ovarian hæmorrhage in a married woman, aged 37, in whom microscopical examination of the ovary after removal showed a marked proliferation of the normal perifollicular vessels with excessive degenerative arteritis of these vessels. He is of opinion that while a certain degree of arterial degeneration is physiological in the vascular network embracing the mature follicle, massive hæmorrhage is never produced by physiological degenerative changes, and when such an accident occurs some pathological process such as a degenerative arteritis will be found responsible.

FORMALDEHYDE-GLYCERINE IN TUBERCULOUS EMPYEMA.

AN interesting chapter in medicine could be written on the valuable remedies which have fallen into disuse for some obscure reason, and have been rediscovered years and even decades later, their revival depending not so much on any technical modification or improvement as on the enthusiasm, tempered with discrimination, of its latest sponsor. Many years ago Murphy advocated the introduction of half an ounce of glycerine-formaldehyde solution into the pleural cavity in cases of tuberculous empyema, and though the results were promising, his procedure does not seem to have been adopted in many European hospitals. In the June number of the *American Review of Tuberculosis* Dr. George B. Kalb reviews his experience of 12 cases of tuberculous empyema observed during the past four years. The seven patients who recovered were treated by the following method. All the purulent material that could be aspirated through a large needle being removed, from 1 to 12 ounces of a 2 per cent. solution of formaldehyde in glycerine were injected, the amount varying according to the quantity of fluid withdrawn. Care was taken at the first injection to introduce too little, rather than too much, and never to inject more than half of the quantity withdrawn. Air was then introduced until the manometer showed a pressure near the atmospheric, or, if the case was one of artificial pneumothorax, the pressure was raised to that usually reached in any particular refill. In two days to a week after the first injection the chest was again aspirated, and it was then common to find the contents of the pleural cavity sero-purulent. More formaldehyde in glycerine was again injected and left in the chest for three to ten days. This treatment was continued till the contents of the pleural cavity became sero-sanguineous; being sterile at this stage, the fluid was not aspirated, but left to be automatically absorbed. Each injection was followed by a more or less violent reaction, the temperature rising as high as 103° F., and a sense of pain and discomfort in the chest being provoked. This reaction rapidly subsided, and in two or three days the patient felt as comfortable as before. Murphy, apparently, advocated the introduction of only half an ounce of the glycerine-formaldehyde solution, but in other respects his procedure was much the same as that already described. In his *Clinics* of 1915 he suggested that the formaldehyde-glycerine solution acted by sterilising the pus and keeping up the polymorphonuclear leucocytosis. Dr. Kalb's seven recoveries out of 12 cases are the more encouraging, as several of the patients who died were already in extremis. His material is, however, small, and it would be interesting to learn what the experience is of other physicians who have adopted this treatment in a large number of cases. Billings has reported a death following an injection of formaldehyde in glycerine, but it is doubtful whether this fatality was due to the composition of the injected fluid. In considering such an isolated fatality the physician would do well to bear in mind that there are few drugs in common use the injection of which has not been credited with sudden death.

DIVERTICULUM OF THE BLADDER.

JUDGING by its absence from the index of current surgical text-books, diverticulum of the bladder is not frequently met with in this country. Mr. Russell Howard in his Practice of Surgery[1] gives a short paragraph on the subject with an illustration of a large diverticulum from the museum of the London Hospital Medical College. According to Dr. Robert H. Stewart[2] of Topeka, Kansas, who records an unusual case, until about ten years ago diverticulum of the bladder was regarded rather as a surgical curiosity than as a pathological condition, coming within the scope of most surgeons' experience. Recent investigations, however, have shown that it is not so rare as had hitherto been supposed. It occurs almost exclusively in the male sex, only a few examples having been observed in women. Two types of vesical diverticulum are encountered. The first, which is found in older subjects, is associated with enlargement of the prostate and urinary obstruction. The second type occurs in younger subjects, without evident prostatism or obstruction, but usually with even more pronounced retention than in cases of prostatism. In either type there may be a single diverticular sac, or there may be one large and several smaller ones. Trabeculation of the bladder wall is generally present. The initial sym-

[1] Journal of the American Medical Association, August 27th.

[1] London: Edward Arnold, 1914.
[2] The Urologic and Cutaneous Review, August, 1921.

ptoms are difficulty and frequency of micturition, with a burning sensation. Patients have all the clinical symptoms of severe cystitis. In old cases there may be a kidney infection, and renal insufficiency may be well marked. In some cases the diverticulum may be felt per rectum. The diagnosis of vesical diverticulum which these symptoms suggest is confirmed by cystoscopic and X ray examination. Stagnation of residual urine in a diverticulum favours infection. Calculi, single or multiple, are found in about 15 per cent. Cystitis extending from an infected diverticulum is very common. The mortality is high in cases of diverticulum complicated by carcinoma, calculi, or marked renal infection. The only successful treatment is radical removal of the diverticular sac either intravesically or extravesically. The latter method may be intra- or extra-peritoneal. In the absence of infection the results of operation are very good. In Judd's 44 cases all survived except ten, two of whom died immediately after the operation. In the 34 survivors the functional results were good. In Dr. Stewart's case, which occurred in a man aged 31, the diverticulum occupied the position of the right ureteral orifice and was complicated by a secondary cystitis in which the only micro-organism found was *B. coli*. Until a year ago the patient had been suffering from gonorrhœa of three years' duration. At the time of publication the case had not come to operation.

TRANSFER OF HEALTH JURISDICTION.

BY an Order (1921, No. 958) made under the Ministry of Health Act, four sections of the Factory and Workshop Act, 1901, are transferred from the jurisdiction of the Home Office to that of the Ministry of Health. These sections deal with (Sec. 61) the prohibition of employment of women after childbirth; the (Sec. 97–100) provisions relating to bakehouses; (Sec. 109) making of wearing apparel where there is scarlet fever or small-pox; (Sec. 110) prohibition of homework where there is infectious disease. Section 61 provides that the occupier of a factory or workshop shall not knowingly allow a woman or girl to be employed therein within four weeks after she has given birth to a child. This section was extended to laundries. Local authorities administering maternity and child welfare schemes are asked to assist occupiers of factories, workshops, and laundries in observing the provisions of this section. Under Section 98 the local authority will now have concurrent powers with the factory inspector to undertake a prosecution in the case of a bakehouse which is unsuitable on sanitary grounds. The powers and duties of local authorities under Sections 109 and 110, relating to homework in premises where there is infectious disease, are not materially affected by the transfer.

Dr. John Elder McIlwaine has been appointed to the chair of materia medica and therapeutics in the Queen's University of Belfast, formerly occupied by Sir William Whitla. Dr. McIlwaine, as one of the physicians of the Royal Victoria Hospital, Belfast, has devoted himself largely to the subject of cardiology.

THE LANCET of January 1st, 1921.

THE Manager will be obliged to readers who have not any further use for their copy of THE LANCET of the above date if they will kindly return it to him at 1, Bedford-street, Strand, W.C.2. The postage on the number is three halfpence. He will be pleased to pay for those returned.

LITERARY INTELLIGENCE. — Oxford University Press announces among its new books from the Yale University Press: "The Dawn of Modern Medicine," by Albert H. Buck; "The Pathology of Influenza," by M. C. Winternitz, I. M. Wason, and F. P. McNamara; and "The Lethal War Gases: Physiology and Experimental Treatment," issued under the direction of Frank P. Underhill.

OPENING OF THE SESSION AT THE MEDICAL SCHOOLS.

MEDICINE FOR WOMEN.

THE inaugural address at the London School of Medicine for Women was delivered by Miss L. MARTINDALE, M.D., B.S., J.P., who began by alluding to recent criticisms made in the press as to the need of women doctors, their capabilities, and the attitude of the public towards them, and proceeded to a brief review of the position of the present woman doctor in Great Britain, her influence on the social and political life of the nation, her relations to the medical profession at the moment, and her place in the scientific, social, and political life of the future.

Dr. Martindale discussed the revolutionary changes in the prevention and cure of disease in modern times. She dealt first with infant mortality, pointing out that the 2000 or more infant welfare centres, the establishment of which had contributed to its reduction, were nearly all staffed by women doctors. She spoke of the maternal mortality of childbirth, practically undiminished since 1884, and of the ways in which this may be combated in the future; also of the need for research into the anæsthetics administered at childbirth. Of the future employment of women doctors in the insurance medical service, Dr. Martindale spoke in hopeful terms.

In the research into the initial stages of disease, now being conducted at the St. Andrews Institute for Clinical Research, Dr. Martindale was, like most practitioners, keenly interested. Speaking from her own experience as a general practitioner, she said:—

> In your hospital work you will be taught the ætiology, the signs and symptoms, the diagnosis, the prognosis and the treatment of the principal diseases that man is exposed to. You will see typical and advanced cases—and learn to recognise these diseases. When you start in general practice you will find to your dismay that many patients will come to you, complaining of feelings of exhaustion, of unfitness for work, of uncontrolled attacks of emotionalism or irritability, of unexplained sensory symptoms. You will examine them as you have been taught to do; you will go into their habits of life, their diet, and so on, and you will probably prescribe a change of air, a daily two hours' rest, and give them perhaps an iron or valerian tonic, and it will not be till later on, when you are collecting your cases together, and trying faithfully to index them according to their diagnosis that you will realise how inadequate your knowledge of the initial stages of disease is, and how inefficient your treatment will have been because you have really been quite unable to diagnose your case. About a year ago I was dissatisfied with my system of records of private patients. I started a fresh card-index, and got my secretary to index, not only according to the names of the patients, but also the diseases they were suffering from—and this was what I found. Of the 3367 cases that I had seen in private practice in consultation only (I did not include those I had visited at home, nor those I had examined in the ordinary routine of school or insurance examination, nor any of my intensive X ray therapy cases) I found that although I had divided those cases under the headings of 327 different diseases, there were still quite a number that were classified under their symptoms rather than their disease. Imagine my relief then when I found that this was the lot of every practitioner, and my interest to find that as an outcome of this experience Sir James Mackenzie had started an institute with the express object of investigating disease before the occurrence of any structural change in any organ of the body, and so providing a diagnosis at a period earlier than is possible by the methods now in use.

Dr. Martindale then described the general scheme of the St. Andrews Institute for Clinical Research, familiar to readers of THE LANCET.

On the question of the treatment of cancer, Dr. Martindale had some hope to offer. She described recent developments in intensive deep X ray therapy, and said that from her own experience in gynæcological X ray work she believed that many of the students of to-day would be radiologists in the future, having under their care many cases of cancer that to-day were still being submitted to surgical treatment. Dr. Martindale pointed out incidentally the importance

of early treatment of carcinoma, too often delayed owing to the very natural dislike of the patient to medical examinations. The terror was often allayed if a woman doctor was available, and if for no other disease than this, the existence of women doctors seemed to Dr. Martindale more than justified. She touched briefly on the pioneer work of medical women, and on their activities during and since the war, and mentioned that in private practice, especially in the provinces, women have worked up enormous practices, and have tried, often in vain, to find partners or assistants to help them in their overwhelming work. She herself prophesied that gynæcology would in the future fall more and more to the task of the woman doctor, just as men's diseases will remain in the hands of men doctors; but was aware that some of her colleagues considered that the future would bring no such change, but that the time would come when all sex distinctions in medical work would be abolished. In this connexion she said that recently in the Women's Factory Department at the Home Office there had been an entire reconstruction: women and men had been appointed irrespective of sex, and worked together, with no specialism even in the kinds of factories visited.

Dr. Martindale offered to the student in preparation for her profession the following advice:—

1. Divide your lives roughly into three—eight hours' work (if you take off Saturday afternoons and Sundays it will mean ten hours work for five days). Eight hours for play, meals, and ordinary reading, and some art or music. Eight hours for sleep.

2. Remember that you will not reach anything like your ideal of being an efficient and useful doctor unless you know something of the world you and your patients live in. You must read widely and keep in touch with current politics, current literature and art, and municipal life, especially inasmuch as any regulations to do with public health are concerned. You must remember the importance of good manners, and suitable and pretty clothes, for it is unnecessarily annoying to a patient to have to put up with slovenly and ugly things to look at.

3. Keep before you your goal, which will not be reached unless you remember to train yourselves in—(*a*) Observation; (*b*) Note-taking—honestly dividing your cases into (1) clear cases, (2) cases in which the diagnosis is doubtful, (3) cases in which the diagnosis is impossible; (*c*) Self-reliance and independent thought; (*d*) Discretion and reticence; lastly, a self-control that will teach you, as Sir William Osler used to say, "To have your nerves well in hand," remembering that it is character in the end that will carry you even further than brains.

THE MERITS OF SMALLNESS.

THE introductory address at Westminster Hospital was given on Sept. 30th by Dr. ADOLPHE ABRAHAMS, who took as his subject the Advantages and Disadvantages of a Small Medical School. Dr. Abrahams said he was able to speak with some experience of both types of medical school; one of the largest in the Kingdom at which he received his own clinical education, and one of the smallest, of which he was proud to be a member of the staff. There were certain advantages which the large school can offer and of which the smaller must be deprived. On the social side a large medical school with perhaps 500 students could provide facilities for every kind of sport and recreation, and the smaller the school the fewer these opportunities. While exercise, and not merely exercise but competitive exercise, was of considerable value to the student, Dr. Abrahams said he could not regard with much sympathy the inducement to join a large medical school for its athletic advantages alone. In London a student could find an outlet for his athletic ambitions whatever they might be, and though it might be more convenient in some ways to play games for one's hospital instead of for a club without any relation to the hospital, students deprived of such advantages did not seem to Dr. Abrahams to merit much commiseration. It was in many ways an excellent thing to get right away in one's recreations from one's daily associates, more especially as medical students more than any other class of students were given to grooviness, want of interests outside their work, and a perpetual atmosphere of "shop."

Other elements of the social side of the student's life, such as societies and clubs, called merely for enterprise and enthusiasm on the part of some energetic members, and it was easier to establish a camaraderie in a small community than in a large one.

The admission of women students to certain small schools was germane to the discussion. For the most part the large schools had not yet opened their gates to women students. There had been during the last few years a remarkable increase in the number of medical students. No school, however large, could accept unlimited students, for which reason the more popular of the larger schools had been compelled not only to exercise a particular selection and subject applicants to a sort of competition, but even to refuse a certain number unconditionally. Dr. Abrahams was anxious not to be suspected of a want of gallantry nor to be ruthlessly misunderstood when he said that the smaller schools were not in the same position as the larger schools with the privilege of picking and choosing; and if the latter had had to refuse admission to women students, these had naturally turned to the smaller schools for, he would not say hospitality or shelter, but accommodation. Educational experts consulted by Dr. Abrahams had hesitated to be dogmatic since the period during which co-education in medicine has been in vogue is still so short, but it had been suggested to him that the distraction from work which social intercourse at a susceptible age was bound to introduce must be counted as an item by no means to be belittled; whether jealousy or emulation arises from an inevitable sex competition he felt quite unable to decide.

On the desirability of the separation of intermediate from final studies, Dr. Abrahams said that assuming that elementary training had been adequate it was of no consequence that it had been provided by those not in touch with the clinical teachers. The translation of the preliminary sciences to an earlier stage so that they became part of general education had been recommended by Huxley, and in 1911 the General Medical Council decided to recognise the teaching of such subjects in approved secondary schools as qualifying for the first professional examination in medicine. In Dr. Abraham's experience there had never appeared to be any special anxiety in clinical teachers to attempt close coöperation with the medical school in its more important office. And surely there was no difficulty to an efficient teacher in extracting from the elementary sciences their proper clinical relationship merely because his environment was separated from that to which subsequently his charges would be committed.

Dr. Abrahams proceeded to consider the clinical training which he considered the really important office of any medical school. While a lecturer could serve 500 students as well as five, and a large audience must act as a keener stimulus than a tiny one, from the student's point of view there might be a very real advantage in listening to one who spoke to him face to face and might become a personal force with a life-long influence. Whereas the compulsory attendance at the performances of an articulate text-book which was so frequently the form taken by a compulsory systematic course of lectures was hated as a wicked waste of time. In actual instruction at the bedside the small school required no defence or justification. The smaller the class the more nearly the teaching approximated to the ideal of individual tuition; the examination pass-lists of the small schools were superior, often remarkably superior to those of the larger schools.

The staff of a large hospital was with comparatively rare exceptions recruited from its own students. To a not inconsiderable extent such appointments became a question of graduation and the selected candidate was not necessarily the best man from the students' point of view. But in the smaller school, vacancies

on the staff occurred but seldom and few students were willing or able to wait for them. Thus in the open competition for these appointments no sentimental motives swayed the electors, and candidates must supply evidence not only of professional capacity, but of ability and willingness to teach. The larger school indeed suffered in this way from tradition, the members of its staff were speaking generally of a type, a highly desirable type, but there was small chance of penetration by the different ideas and ideals of other schools. Moreover, the newly elected member of the staff was likely to be a younger man than his colleague who joined the staff of a larger hospital.

Few there are who can aspire to Kipling's exhortation to wait and not be tired by waiting, and to reach a hospital staff after many years of professional experience is not to find oneself in the best condition in which to apply oneself to the requirements of the elementary student. I think, too, the man of great experience—invaluable, of course, to the more advanced student—is not always the best teacher of the rudiments of clinical medicine and surgery. One may regard the pitfalls of diagnosis, the mistakes against which the elementary student must be warned, as the ruts over which the inexperienced traveller stumbles, the recollection of which will be more vivid to the younger specialist still sufficiently footsore to be wary than to the smoothly travelling automobilist whose comfort obliterates all memory of the weary pedestrianism of his youth. The student must be helped to pass his examinations. I can remember a most admirable teacher at my own medical school, a man who taught us no examination surgery, but the practical details of handling patients and patients' relatives. We whom he taught are indescribably grateful now for his invaluable instruction, but we took longer to qualify than our colleagues, and I am afraid did not appreciate him at the time, for we felt that our real education might legitimately begin after we were qualified, and that until we were qualified we were at too great a disadvantage to listen to him without restlessness.

Dr. Abrahams claimed as another advantage of the small school that a resident appointment, the value of which could not possibly be over-estimated, was so much less difficult to obtain. He spoke also of the greater facility of coördination, and of the more balanced allocation of duties to clinical clerks and dressers. The inducement offered by the tradition was not monopolised by the large school. There was no school throughout the kingdom which had not famous sons. Naturally, the larger the school the larger its list of celebrities; but we ought to remember that the school should be measured by its average, not by its exceptions. In conclusion Dr. Abrahams said:—

I have attempted to represent to you without bias, so far as the absence of bias is possible, the pros and cons of the small medical school. I am sure that you will have sympathised with me in that although I have attempted fairly to look at the matter with unprejudiced eyes my inclination has been towards championship of our smaller medical institutions. And not from merely sentimental motives, for the problem must be squarely faced when so important a question as choice of an alma mater is under consideration. It is a question, too, of direct competition, not one of a small inferior institution in contrast with a large admittedly superior one. The large school must always make a strong appeal, so much so that the whole subject at first blush is one for dismissal with the cynical conclusion that it demands no more argument than would be necessary in the case of a debate upon the relative advantages and disadvantages of a small income. Yet even that subject cannot be summarily dismissed if one may judge by the appearance, far from self-satisfied, and the public pronouncements, far from enthusiastic, of the wealthy. Rarely, indeed, in anything can there be unqualified advantages, and I hope I have been able to show that there is so much to be said in favour of the small school that I may in all sincerity congratulate you upon the choice which you have made.

HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET, LONDON, W.C.—A course of lectures, free to medical practitioners, will be given at the hospital on Thursdays, at 4 P.M., from October to December. On Oct. 13th Mr. O. L. Addison will lecture on Acute Infections of Bone. Subsequent lectures will be announced in our Medical Diary. Clinical instruction is given by the members of the staff at their visits; fees for three months' attendance are £5 5s., and for perpetual attendance, £10 10s.

NOTES ON THE TEACHING OF PATHOLOGY IN AMERICA.

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BY the kindness of the Rockefeller Foundation I was able to spend some time in the spring of this year in studying the practice of medical education at the leading schools in the United States and Canada. The visit was extremely instructive, and one learned a great deal from what high ideals and pretty ample resources have been able to accomplish there by way of reforming the preparation of medical men. And along with a good many lessons in what to imitate, one learned a few in what to avoid.

Differences in Curriculum.

Leaving aside for the present more general matters, I want here to note a few points in connexion with my own subject which appeared to me specially useful. To make them intelligible, however, it is necessary to summarise briefly the differences in the general arrangement of the curriculum there and here. The "medical course" lasts four years, and it begins with anatomy. Chemistry, physics, and biology must be taken in a "pre-medical course," which is required to be of at least two, and sometimes four, years' duration in a university. Roughly speaking—and it will be understood that the details vary in different places and that no general proposition is true of all—the first two years of the medical course are occupied with anatomy, physiology (including biochemistry, which is treated amply), pharmacology and pathology, the third year with didactic clinical teaching and the fourth with practical work in the wards. Compared with our curriculum, relatively more time is given to laboratory work and less to actual contact with sick, a defect which is being widely recognised, so that a year's work as resident ("intern") is everywhere customary among the better men and in some places compulsory. The course is evidently longer than ours, the minimum being six years, the maximum nine. The university degree, which is reached at the end, does not give a qualification to practise which must be obtained from the relevant State Board. The number of students taken in each year is rigidly limited at all the better schools by selection from a considerably larger number of applicants.

Pathology is studied in the second medical year. The relations of *bacteriology* to the rest of the subject are various. In some places they are united as commonly in England, while in other schools they have separate departments and staffs. Local opinions differed as to which arrangement was the better, but they were tolerably unanimous that it was desirable that the two topics should to a large extent be taught as one—e.g., that the student should study the pneumococcus at the same time as he studies the histology of acute lobar pneumonia. This can be achieved either by taking bacteriology as a subsection of pathology or by an amiable coöperation between separate organisations; in the latter case sufficiently divergent ideals or incompatible personalities may cause considerable difficulties. The nominal arrangement which exists in Manchester and some other English schools whereby the "professor of bacteriology" teaches public health students, while the "professor of pathology" teaches bacteriology along with the rest of pathology to medical students, was not met with: schools of hygiene are at present quite rare in America. Bacteriology, whoever teaches it, usually precedes morbid anatomy and histology, a sequence which is undoubtedly the best suited to the preceding and succeeding subjects of the curriculum. It is sometimes taken early in the first year and not uncommonly along with physiology towards the end

of the first or at the beginning of the second year. To one brought up in English schools, where the student reaches his first contacts with clinical work and bacteriology simultaneously, this seems at first sight strangely early. It is not, however, difficult to appreciate that the fundamentals of the biology of bacteria and especially the all-important technique of bacteriology can be taught to advantage quite early in the curriculum.

Pathology and Clinical Work.

The temporal relations between pathology and clinical work are thus quite different in America and England. In America the whole of the systematic course is taken before the student does any clinical work: in England the two subjects are begun simultaneously after the break in the curriculum which marks the completion of anatomy and physiology. The result is that in London under present conditions it is very difficult to find time for adequate laboratory work in pathology since the student, once he begins clinical work, very sensibly spends practically his whole time at it; in other centres in this country more time is available since as a rule only about half the day is given to ward work in the first year of clinical instruction. There is a growing feeling that some at any rate of the pathological course ought to be taken before clinical work is begun and this is the first important point in which I think we should do well to imitate American practice, though not to copy it too closely. A general elementary knowledge of, e.g., what inflammation is and what bacteria are and do is as necessary an introduction to the intelligent apprehension of disease as is anatomy or physiology: the case for the pre-clinical study of bacteriology is particularly strong. The end of his pre-clinical period also finds the student in a more suitable frame of mind for the proper reception of the principles of pathology than is generally present during his clinical work. For it is the experience in America as well as in England that when a student comes into real touch with sick people they are apt to absorb his whole interest and it is only as he proceeds further in his course—and often enough not even then—that he realises that what he neglects as intellectual and academic is an organic part of what he welcomes as humane and practical.

But it is very questionable whether the attempt which is made in many American schools to cover the whole range of bacteriology, morbid histology, morbid anatomy, and serology in the pre-clinical period is a satisfactory arrangement. Much anatomy and serology, for instance, are intelligible and of interest only in relation to particular human diseases and have little importance from a purely pathological standpoint—from the standpoint, that is, of the science which could exist if there were no human diseases or medicine or surgery at all. The plan which seems the best and which should not be difficult to carry out is to take "general" pathology and bacteriology in the pre-clinical period and "special" pathology all through the clinical period while the student is spending most of his time studying disease in the living. There is of course no clear boundary between "general" and "special" pathology. Roughly speaking, however, the former consists of those topics which are of importance to the general principles of the science, it may be irrespective of human disease, though by choice in relation to it, while special pathology considers the phenomena which are of moment in relation to the particular diseases which are the concern of medicine and surgery. The theory of tumours is general pathology; the various sorts of tumours of the breast, their nature, frequency, and so forth, is special pathology; the practical difference between encephaloid and scirrhus is clinical pathology. The relation of the animal economy to foreign proteids and the formation of antibodies is general, diphtheria antitoxin is special, the Widal reaction clinical. To recognise the existence of these categories is for the improvement of teaching; to insist upon them is to encourage the current vice of cutting up the curriculum into water-tight compartments.

Teaching Materials: Post-Mortem Examinations, Museums.

Specimens in bottles and sections under the microscope look just the same in America as in England, and one's feeling of being at home among their friendly pathologists is encouraged by the fact that the methods of instruction are very much the same as ours—definitely more so than in physiology or medicine. In physiology the American students seem to do more for themselves and to embark on larger and more elaborate experimental observations than ours do; in medicine they are less independent than ours. Two points are worth notice. The study of morbid anatomy is greatly hampered by the difficulty of obtaining permission to make *post-mortem examinations*. The proportion of deaths in hospital which come to autopsy varies much in different places according to the composition of the local population (Roman Catholics, Jews, &c.), the skill and urbanity of the resident medical officers, and the general state of public opinion in the city on the subject; it seldom rises above 60 per cent. and may fall as low as 10 per cent. The disadvantages of this state of affairs needs no emphasis; but it is perhaps not easy for us, who have been brought up on almost universal post-mortems, to realise how great they are. In consequence there is a disinclination to allow the undergraduate student to do the actual work of the autopsy, the reason usually given being that they are liable to make a mess of valuable material. The question of striking a reasonable balance between doing the work in the best possible manner and allowing the student to learn in a real way seems to be generally settled against the student.

The other thing which strikes one is that *pathological museums* bulk much less largely than with us. The post-mortem difficulty is to some extent no doubt responsible for this, but it is chiefly due to the difference in the historical development of medical education in the two countries, for the museum cult in general is at least as highly developed there as here. Medical education and research in England had grown within a measurable distance of their present position before the experimental method began to make any great impress on the biological sciences; under these circumstances it was natural that the methods of Cuvier and Hunter should have a predominant influence, and the extensive collection of specimens from the dead-house was a corollary to the impetus which careful autopsy work was giving to medical science about the middle of the nineteenth century. In America the experimental method was well understood as a weapon of progress before the great reform in medical education began 15 or 20 years ago. The museum at that time had come to be relatively less important, and it had not established itself as one of the chief items of equipment before the interests of laboratory work reduced its comparative prestige. The truth probably is that we attach undue importance to an instrument of instruction that is of less moment than it used to be; in America a useful item is apt to be neglected. It is probably no harm that the form of oral examination, which hinges on the identification of museum preparations, is apparently unknown.

The Cult of Clinical Pathology.

The work which in England is commonly known as "clinical pathology" is pursued in America on a scale and with an intensity which is hardly known with us. In a few places the actual laboratory work is done by the pathological department, as commonly here, and this is more often the case with surgical investigations and bacteriology than with inquiries starting in the medical wards. In the better schools, however, the obvious truth that making a blood count is no more a part of "pathology" than is auscultation with the stethoscope has long since been realised, and the work which with us is done by the clinical pathologist is undertaken by the departments of

medicine, surgery, obstetrics, &c., as the case may be. This is an arrangement which it is difficult to value too highly from the student's point of view. No intelligent student will take what the pathologist tells him about medicine or surgery very seriously in comparison with what he learns from his clinical teacher. Since definite clinical pathological laboratories staffed by pathologists have been developed (mostly in the last 20 years) it has been consistently impossible to bring conviction to the student that observations made there are really just as much a part of genuine practical medicine as those requiring no special apparatus which he makes in the wards, that they are subject to the same sort of error, and require the same common sense in interpretation. The position has been aggravated by the fact that his clinical teachers have not always been able to form a critical estimate of the laboratory findings or to place them in their proper relation to the other data from which the diagnosis has to be deduced; the exaggerated respect of some has been as much misplaced as the contemptuous indifference of others. The laboratory work has in consequence been too often looked upon by the student as something curious and remote, possibly interesting, but of no particular concern to him as a practical doctor. In America the bulk of the routine "clinical pathology" is done as a matter of course by the residents; in the most highly developed institutions wards and laboratories form one department under the same head, and those who work in the laboratories are also in charge of patients in the wards. If laboratory examinations are of any value in practical medicine and surgery there can be no doubt that this arrangement is a great advance on our English plan. It achieves a unity of purpose, effort and result which can be obtained in no other way, and it is much to be hoped that in one form or another it will be widely adopted with us.

The advantage is not wholly with the clinical subjects. For if the rise of "clinical pathology" has not done so much harm to pathology as it has done good to medicine, it has done a good deal of damage by deflecting the minds and energies of pathologists from the science which they profess to its technical applications. If "clinical pathology" can be attached to its proper clinical sphere pathology will be the more free to make the genuine progress which lies open to it as a great branch of biological science. The activities of clinical laboratories in America include a good deal of work which in our curious terminology we should call "physiological." The problem of "bringing the physiologist and pathologist to the bedside," about which we have heard so much in recent years, is in this way solved. In America, at any rate, there is no insuperable difficulty in finding men with adequate training in laboratory methods whose real interests are clinical. It is not necessary to bring them to the bedside; they would go there any way.

CONTRACT MEDICAL PRACTICE: CONDITIONS A GENERATION AGO.

THE conditions of contract medical practice have altered profoundly within the experience of many still in practice, and it may serve a useful purpose to recall briefly the state of affairs as it presented itself to the Special Commissioner of THE LANCET 25 years ago. He observed and inquired, recording what he saw and heard without hastening to point morals, but it then seemed clear to an impartial mind that, while schemes to secure medical attendance at low rates might be praiseworthy in aim, and while it did not necessarily imply disgrace to be medical officer to a medical aid association, nevertheless the schemes were unworthy if they involved oppression of other poor people, and were mismanaged if others than the truly necessitous received benefit from them. The following examples are taken from our Commissioner's experience, names of localities being omitted as no longer relevant.

Urban Medical Clubs.

In the year 1896 an area in a county town with a population of 50,000 was worked by two medical clubs, a Medical Institute and a Friendly Dispensary, about 20,000 of the inhabitants obtaining medical attendance through these clubs at reduced rates. The resident medical officers, though debarred from private practice, did not receive the whole of the money earned by their exertions. Thus in the latest completed year for the 4889 members of the Institute there were 24,173 medical consultations, 34,431 prescriptions were given, and 6934 visits were paid; for this medical aid £989 was collected from subscribers, of which only £384 reached the hands of the medical officers. Dispensers received £116, cab fares absorbed £65, drugs £161, and £32 was allotted to administration. But the remaining £231 was pocketed by the Institute in spite of a stipulation that no profit should be made out of the medical men. In the same year the Dispensary had 4398 members requiring 16,763 consultations, 27,255 prescriptions, and 7815 visits. Of the total receipts, amounting to £917, the three medical officers got only £478, a net profit of £134 being made by the Dispensary. To produce this profit the medical men in the service of the society were giving consultations and advice at an all-round average of 4½*d.* a time. All classes of the population were invited to join these institutions, and the medical officers had to attend wealthy tradesmen and others in a large way of business as well as those who had retired in affluence. The rate of subscription was 3*s.* 6*d.* per annum with an addition of 8*s.* for wife and any number of children under the age of 16. In the year mentioned 36 medical practitioners in the town agreed to ask that the capitation fee for members with an income exceeding £1 a week should be raised to 4*s.* 4*d.* per annum with 5*s.* for wife and 4*s.* 4*d.* for each child, not more than four children in any one family being charged for; further, that no member should be admitted with an income from all sources of more than £2 a week or a higher rental than £20; that extra fees should be chargeable for minor operations, confinements, vaccination, and examination previous to admission; and that the medical officers should receive the whole of the above fees after deduction of legitimate expenses. The medical clubs rejected these conditions and a Medical Protection Fund was started to maintain the medical officers who resigned in a New Provident Association.

Exploitation by Individual Speculators.

At the same period in a Midland city, medical men seemed so incapable of attending to their own business that laymen came to their assistance, naturally pocketing a large share of the profits as a reward of their greater organising capacity. The Medical Aid Association was conducted by a Mr. X, with the help of 40 or 50 house-to-house canvassers; he received for each patient 1*d.* a week or 4*s.* 4*d.* a year, paying the surgeons 3*s.* a year per member. In practice, however, the whole of this not very generous capitation fee did not reach the doctors, as 2 per cent. was deducted from the account for unexplained reasons, and the fees paid by the many members lapsing without completing a quarter went into the employer's pocket. Mr. Y was the proprietor of a Medical Self-supporting Society to which upwards of 2000 members contributed weekly 1*d.* apiece, making himself responsible for the payment of quarterly fees to the doctors. In this institution there were, to use Mr. Y's own words, no officers, no committee, no medical staff, no drug stores, no heart-burnings, no jealousies—only, in fact, Mr. Y himself. The doctors received their cheques regularly, but an income of £14 a quarter was the utmost to be obtained in Mr. Y's service, any request for explanation of the amount being met by the production of a perplexing array of figures. Medical officers were, however, freed from complaints on the part of patients, for Mr. Y was prepared to defend his employee against a customer just as a shopman would argue the excellent quality of his goods against a fault-finding purchaser.

Rural Contract Practice.

As an example of the conditions prevailing in rural areas, Dr. S was attending in 1896 the 6000 inhabitants of the village in which he lived and the outlying districts within an area of three miles. In the environs there were lodges of two national friendly societies, a local friendly society admitting both men and women members, and a family club in the nature of a medical aid society giving no financial benefits. The subscription to the last-named was 9*d*. per quarter, out of which Dr. S paid 5 per cent. to a collector. In the village were eight medical aid clubs or societies without adhesion to which Dr. S believed he could not earn a sufficient livelihood; also a National Medical Aid Company which did not scruple to put children on its books for ½*d*. a week. In one case a child was put on the books on a Monday, and died before the week was out, Dr. S's fee for three visits and a death certificate being therefore ½*d*. The club practice was so extensive that 50 visits a day was a frequent programme, apart from surgery consultations. During the influenza epidemic the pressure was so great that Dr. S's health was shattered and he found himself out of pocket. The club members entered without medical examination and paid their medical officer 3*s*. a year; those suffering from tubercle became patients from their first week of membership. No stringent measures were taken to see that subscriptions were paid regularly; a member with lapsed payments could secure another card and present himself as a new member, avoiding payment when in good health. Lists could not be verified and Dr. S was at the mercy of the collectors, for it would have been suicidal to complain. The principal manufacturer of the district, paying £600 a week in wages and £50 a year in rates and taxes, was a member of one of the friendly societies and had to be attended at 4*s*. a year; he suffered from hæmoptysis. Not only the tradesmen avoided paying fees, but also the stewards of both political clubs, the minister of a chapel, one of the churchwardens, and in most cases the wives also of subscribers to medical aid organisations. Club patients governed the vote of guardians and district council, and complaint from Dr. S would simply have resulted in the appointment of a stranger as medical officer of health and Poor-law doctor. In the surrounding villages things tended just as much to the degradation of medical practice.

MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE SOCIETY, LTD.—The annual meeting of this society was held at Lincoln House, High Holborn, London, W.C., on Sept. 26th, when the first report submitted since the conversion of the society into a mutual company was adopted. The report stated that the number of policies issued in the sickness and accident fund was 302, for annual premiums of £4318 15*s*. 9*d*. Sickness claims paid amounted to £20,007 3*s*. The total premiums amounted to £41,066 12*s*. 1*d*., and the accumulated funds amounted to £218,074 6*s*. 1*d*. The number of policies issued under the life assurance fund was 90, assuring £59,005 10*s*. (less re-assurances £10,200) for annual premiums of £1999 7*s*. 6*d*. and single premiums of £1387 7*s*. 8*d*. The claims paid amounted to £1187 10*s*., and the total premiums amounted to £6365 1*s*. 8*d*. The total premium income of the society amounted to £47,431 13*s*. 9*d*., and the expenses of administration were £5315 18*s*. 1*d*., being 11·2 per cent. of the premium income. The chairman, Dr. F. J. Allan, said that as a result of the change to a limited company more business had been done every week than had been done in a month under the old régime. In the sickness fund the new annual premiums were nearly three times the average for the previous year. The ratio of expense only slightly exceeded that of 1919 and some of that expenditure might be regarded as extraordinary and not likely to occur again. There was no other company that could offer such good premiums in all branches of sickness and life assurance. Dr. Knowsley Sibley, who seconded the adoption of the report, pointed out that the society was the only one that issued a permanent contract so that a man once insured remained insured up to the full period. On the motion of Sir William Willcox, Dr. Harvey Hilliard, a retiring director, was reappointed, and Dr. Charles Buttar was elected in the place of Mr. E. M. Corner, who has retired on account of ill-health. The report is more than satisfactory.

Public Health Services.

PANEL REPRESENTATION IN PARLIAMENT.

THERE is a trust fund under the control of the British Medical Association known as the Medical Representation in Parliament Fund. Panel committees have subscribed to this fund in varying amount, Manchester with £200, Devon with £42, and York with £33 at present heading the list. The trustees of the fund hope to support at least two candidates of differing political colour, but the income so far does not justify more than one candidature. The trustees have recognised and are supporting Dr. H. B. Brackenbury, whose services to insurance practitioners are well known. He is believed to have a reasonable chance of success.

HEALTH INSURANCE IN IRELAND.

The threatened division of the Insurance Service between Northern and Southern Ireland is exercising the minds of the Approved Societies Association in that country. The chairman of executive of the Association described the working of the Insurance Act in Ireland as "a service of social reform which had ameliorated the condition of hundreds of thousands of workers . . . . and had materially assisted . . . . in restoring them to health and earning capacity." It was resolved to ask the Irish Insurance Commissioners to accede to a unanimous desire on the part of the approved societies to continue as at present at least until December, 1923.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Belfast.

THE annual report of Dr. H. W. Bailie, medical superintendent officer of health, for the year 1920 has just been issued. It is a full and comprehensive document and affords ample information upon all questions of health and sanitation. The population, as estimated by the Registrar-General to the middle of the year, was 413,000, an increase of 12,000. The birth-rate was 29·4, an increase of 3·7. The death-rate from all causes was 17·5, from zymotic diseases 1·5, and from chest affections 5·6 per 1000. There has been a decrease of 0·4 per 1000 of the population in the death-rate from all causes, and of 1·0 from chest affections. The deaths of children under one year old were 132 per 1000, an increase on the preceding year of 19 per 1000. The notifications of infectious diseases were 2689, a reduction on the previous year of 699. The zymotic rate has shown a progressive decline since the year 1901, when the rate was 3·3 per 1000. In the quinquennium 1901–5 the rate was 2·6 per 1000; in the next two quinquennia the rate was stationary at 2·0 per 1000; in the last quinquennium the rate was 1·5 per 1000. The improvement is largely due to the progressive decline in the incidence of typhoid fever, which was formerly very prevalent in Belfast, but which has now reached moderate proportions. The total number of cases of typhoid fever was 199, an attack rate of 0·48 per 1000 of the population. The deaths numbered 34, equivalent to a case mortality of 17·1 per cent. A large number of cases were traced to infected milk-supply. In 22 cases a history of having eaten shell-fish previous to the onset of illness was obtained. The report states the high death-rate from diphtheria, a case mortality of 16·5 per cent., could be considerably reduced if prompt action were taken to have all cases of throat trouble examined and treated. In many instances the cases are too far advanced before coming under medical treatment. There were 62 cases of puerperal fever with 39 deaths, equivalent to a case mortality of 62·9 per cent. Careful inquiry was instituted regarding the relatively large number of cases of the last-mentioned disease, and precautions were taken. Infection was in several cases traced to nurses, the mortality being least in cases treated

in hospital. In the late spring and early summer there was a fairly widespread epidemic of encephalitis lethargica, but precise information is not available. Of 9 cases admitted into the Purdysburn Fever Hospital 2 died, 5 were discharged completely cured, and 2 after a prolonged stay in hospital had not completely cleared up on discharge. Considerable progress was made during the year in the treatment of venereal diseases. Clinics are available at the Royal Victoria Hospital, the Mater Hospital, and the Union Infirmary. Salvarsan or its substitutes are supplied free of cost under certain reservations to medical practitioners; and the assistance of the pathologist or one of the medical officers from any of the established centres for consultation, or the taking of specimens for examination, and for carrying out the treatment is available. 3522 Wassermann tests and 484 microscopical examinations for the detection of spirochætes or gonococci were made during the year at the laboratories connected with the clinics and at the Queen's University. Steps were taken for dealing with cases of venereal disease in sailors visiting the port of Belfast.

There were 762 deaths from phthisis registered during the year, equivalent to a rate of 1·8 per 1000. The marked decline in the mortality from this disease in recent years is most satisfactory. In 1901 the death-rate from phthisis was 3·1 per 1000. In 1911 the rate had fallen to 2·1 per 1000, and the rate for 1920 is the lowest in the history of the city. Pneumonia, on the contrary, seems on the increase. In 1905 in an estimated population of 360,000 there were 577 deaths from this disease. In 1920 in an estimated population of 413,000 the deaths from pneumonia numbered 800, as against 712 in 1919. It is instructive to note the relative mortality from phthisis and pneumonia in a long series of years. In 1905 phthisis claimed almost exactly double the number of deaths as compared with pneumonia. The pneumonia figure crept up as that of phthisis declined, and now slightly exceeds the latter.

The least satisfactory item in the report is the relatively high rate of infant mortality, which shows an increase on the previous year. This is the more regrettable as great efforts have been put forth in connexion with the six maternity and child welfare centres. Dr. Bailie complains that expectant mothers do not take sufficient advantage of the information and advice offered at these centres. An infant mortality rate of 132 per 1000 is far too high even for a large industrial and manufacturing centre such as Belfast. It is significant that the rural rate in Ireland, even under poor hygienic condition, is very low, about 60 per 1000, and in some counties the rate is only between 40 and 50 per 1000. The influence of "congenital debility" and "prematurity" is often much exaggerated. The rate in Belfast was 143 per 1000 in 1913, so there has been some slight improvement.

A health exhibition was held in the city in May, 1920, and in connexion with the exhibition a series of lectures were given on housing, tuberculosis, milk, health in schools, oral sepsis, and kindred subjects. Ireland is still without a system of compulsory medical inspection of schools and scholars, a deplorable gap in the machinery of preventive medicine. During 1920 1768 visits to the various schools in Belfast were made, but the powers of the medical officer in this connexion are very limited. On 529 of these visits the number of pupils in attendance was found to exceed the school accommodation. In 11 schools various sanitary improvements were effected. The report is in many respects encouraging.

Ealing.

Ealing, as Dr. T. Orr tells us, is a favoured spot; the borough is almost entirely residential with a few small factories and no real slums, it is well supplied with parks, open spaces, and allotments, and with a lay-out giving plenty of space between the houses; as one would expect, its health statistics make a good showing even in a year of low death-rates. The estimated population in 1920 for birth-rate was 76,299 and for death-rate 76,129. The birth-rate was 17·8, the death-rate 8·8, the infant mortality rate 47, and the death-rate from all forms of tuberculosis 0·74. There has been trouble with the pollution of the Brent by the unsatisfactory effluent from the Wembley sewage works. There is a comprehensive maternity and child welfare scheme which will be rendered more complete by the agreement for the management of the Chiswick and Ealing Hospitals by a joint committee. By this agreement the Ealing Hospital will become the Isolation Hospital and the Chiswick Hospital the Maternity Hospital for the two districts. Eight cases of ophthalmia neonatorum were notified, in two of which permanent damage to the cornea resulted. The council took over a hostel with accommodation for 11 unmarried mothers and their babies in June, 1920. The work of the maternity and child welfare department and the school medical service is well coördinated and carried out in the same building, the only weak spot being that the council have not control of their own midwives. Dr. Orr points out that the two great needs of the school medical work are the provision of a school for mentally defective children and an open-air school for physically defective, anæmic, and poorly nourished children.

SUMMER DIARRHŒA IN LONDON.

The hot, rainless third quarter of the year was fortunately not associated with the devastating attacks of summer diarrhœa that might have been anticipated in light of the experience of the summers of 1899 and 1911. A sign of the topical interest in the extent of summer diarrhœa this year was manifested at the English-speaking Conference on Infant Welfare held in July, when the reading of a statistical paper on the influence of weather conditions on the mortality of infancy elicited an energetic discussion, in the course of which a medical officer of health stated that the number of infantile diarrhœal deaths this year would serve as a measure of the value of the increased supervision of infants instituted during the last decade. Fortunately, judged by this severe standard the work has been abundantly justified. The death-rate from diarrhœal diseases has remained consistently low during the last five years of varying meteorology; this year the records available at present show that, in London at least, although the weekly number of deaths has been considerably above the average of the last five years, nothing like the loss of life which occurred in 1911 has taken place. In 1911, during the weeks ending July 1st–Sept. 23rd, 4097 deaths from diarrhœa and enteritis under 2 years occurred; in 1921 for the same period the number of deaths was 1173.

CATGUT AND SURGICAL NEEDLES: DEMONSTRATION AT THE LONDON HOSPITAL.

ON Oct. 1st a demonstration was given at the London Hospital of the manufacture of ultra-tan catgut. Ordinary commercial catgut cannot with absolute certainty be sterilised by any method which does not also destroy its usefulness as a ligature and suture material, as the hospital found by unfortunate experience during the early part of the war. The London Hospital was, therefore, led to prepare its own surgical catgut under conditions which ensure its sterility. The material they now make and use is the result of several years' experience in manufacture, and gives complete satisfaction to the surgeons of the hospital and others who use it.

The secret of the success of the process is that the gut is rendered sterile throughout its substance at the earliest possible moment in its manufacture, and thereafter mere surface sterilisation is sufficient. The whole process, from the first cutting up of the fresh sheep's gut, is carried out in one building under conditions which resemble those of the operating theatre. The girls engaged in the process "scrub up," and wear caps and overalls; evidently they understand the principles of asepsis. The actual process of preparation consists, briefly, of cutting the gut into lengths, removing the mucous and muscular coats by scraping, and the fat by prolonged soaking in repeated changes of alkali, sterilising in a solution of biniodide of mercury, spinning while wet, and drying. The dried strands, strung separately on a frame which carries a score or more of strands, are then immersed in a hardening

solution for varying periods according to whether the finished article is to be a 10, 20, 30, or 40 day gut. The catgut is then dried and wound into hanks supplied in cardboard boxes ready for "surface sterilisation" by any of the well-known methods. If preferred, the gut can be supplied in carbolised alcohol in sealed glass tubes, fully sterilised and ready for immediate use.

The most meticulous care is exercised in obtaining a reliable as well as sterile suture material. Thus every strand is tested at several points in its length both for tensile strength and evenness of diameter; and those which vary by any appreciable amount are rejected. When handled the catgut was found to be smooth, even, pliant without being limp, and of unusual strength. The surgeon can also rely on the gut lasting in the tissues for the required time, since the hardening process is the result of several years' experiment in man. It should be mentioned that the figure in days refers to normal adult muscle. Thus a 40 day catgut remains unabsorbed for just 40 days in muscle; in the peritoneum it is found to last about half that time, and when exposed to human digestive juices, as in the inner suture layer of a gastro-jejunostomy, only about 10 days.

A demonstration of the Souttar needle already described in THE LANCET was also given. The principle has now been applied to curved as well as straight needles, both of the round-bodied and cutting varieties, and mounted with various suture materials. Difficulty was experienced in obtaining an alloy for the shank that would "stand up to the work" on a curved needle, but it is believed that this difficulty has now been overcome.

The catgut and Souttar needles, the patent for which is owned by the London Hospital, are both marketed by Messrs. Allen and Hanburys by arrangement with the hospital, which receives the profits from the sale.

BRITISH ORTHOPÆDIC ASSOCIATION.

A CLINICAL meeting of the British Orthopædic Association was held on Oct. 1st and 2nd at the Shropshire Orthopædic Hospital, Oswestry. This hospital has recently removed from its well-known position at Baschurch to these larger quarters. On Oct. 1st Sir Robert Jones gave a clinical demonstration of a number of cases under treatment in the wards, including rickety and paralytic deformities and cases of tuberculous disease. Mr. Naughton Dunn demonstrated his stabilising operation for the treatment of paralytic deformities of the foot, the principle of which is that in severe cases of paralysis of the foot the deformity is corrected by a bone operation, which includes the removal of the cartilage surfaces from all the tarsal joints, so that these joints become fixed, leaving a foot which moves at the ankle-joint as a simple hinge. All the anterior muscles are thus left as pure dorsi-flexors of the foot, and the posterior muscles are transplanted into the tendo Achillis to act as plantar-flexors. Mr. G. R. Girdlestone demonstrated a method of treatment of Pott's disease carried out in the hospital, and showed a number of cases which had been treated by bone transplantation. Mr. D. McCrae Aitken demonstrated a method of correction of severe kyphosis and of scoliosis on the Abbott's frame. In the afternoon visits were paid to after-care centres, a number of which have been established throughout the county of Shropshire. The children under observation or treatment attend one day in each week, preferably on market day. They are seen weekly by the visiting nurse and once a month by a medical officer from the Orthopædic Hospital. Records, including photographs and plaster casts, are kept at the after-care centres, measurements for splints and appliances made, and simple plaster cases applied at these centres. On Oct. 2nd a series of operations were performed—namely: (1) Albee's operation for spinal caries, by Mr. Girdlestone; (2) osteotomy for mal-union of fracture of the femur, by Mr. Aitken; (3) stabilising operation upon a paralysed foot, by Mr. Dunn; (4) correction of a club foot in a child of 7 with the wrench, by Sir Robert Jones; (5) Souttar's operation for displacement of the anterior superior spine of the ilium as a means of correction of flexion of the hip, by Mr. Noble.

Correspondence.

"Audi alteram partem."

A MEDICAL SUPERANNUATION FUND.

To the Editor of THE LANCET.

SIR,—The formal notice from the Ministry of Health as to a reconsideration of the remuneration fee brings again an opportunity for the establishment of a superannuation and insurance fund for all doctors working under the National Insurance Act. This fund should form an integral part of any agreement between the Ministry and the panel committees. With an elastic scheme of benefits all possible contingencies could be dealt with. Existing insurances, the problems of varying size of lists, and the varying ages of the doctors, could, with actuarial assistance, be fairly and adequately met. Surrender values could easily be arranged for doctors leaving the service, changing their type of practice, or going abroad. Most important of all, the disaster of unexpected broken health could be generously dealt with by the committee of management of such a fund.

In 1913 such a scheme was suggested, and the late Sir George Hardy kindly helped to draw up certain tables. In 1919–20 the London Panel Committee passed resolutions in favour of a scheme for the establishment of a pension fund, and Dr. Addison expressed himself in favour of the principle. Now, again, an opportunity presents itself, and it is to be hoped that panel committees throughout the country will support the principle and leave the details to be formulated by the Insurance Acts Committee and the Ministry. Surely the medical profession cannot be so blind as to fail to realise the immense advantages to be gained under such a scheme.

I am, Sir, yours faithfully,

H. H. MILLS.

St. Mary Abbot's-terrace, W., Oct. 3rd, 1921.

INQUIRY INTO THE INSURANCE ACTS.

To the Editor of THE LANCET.

SIR,—The executive council of the Federation of Medical and Allied Societies trusts that you will publish the following memorandum, with postscript, sent this day to the Minister of Health. It is the result of deliberations extending over the past four months and I am instructed to state that other medical societies wishing to add their support may do so without obligation.

To the Minister of Health,

"We, the undersigned duly appointed representatives of organisations coöperating in the Federation of Medical and Allied Societies (Inc.), being influenced solely by a desire to promote the health and contentment of the people with whose physical well-being we are intimately concerned, request the Minister of Health to consider the advisability of setting up an independent committee to take evidence in public, inquire into, and report concerning the working of the National Health Insurance Acts.

"The following reasons appear to justify this request:—

(1) The Acts were introduced as an experiment in public health administration and have been in force for over nine years. Yet no sufficient data are available by which to judge of their efficiency or inefficiency. Neither is it possible to estimate to what degree, if any, they have tended to raise the standard of national health.

(2) Criticisms, often ill-informed but none the less damaging to the smooth working of the Acts, are made of the Health Ministry's methods, of the administration of the approved societies and of the services the insurance medical practitioner provides.

(3) The Acts authorise certain medical services only and these, with the advance of knowledge in preventive and curative medicine, fall short of providing the insured with all that modern medicine has to give.

(4) A reduction of the present capitation fee of panel medical practitioners is reported to be imminent. But any such reduction made *before full inquiry* has been held into past results and future requirements, would tend to prejudice future negotiations and alienate the goodwill of those practitioners whose coöperation is essential to the success of the service.

"Representing, as we do, many distinct branches of medical practice and of professions ancillary to medicine, we have considered this matter from widely different angles, ever keeping before us the needs of the community, to which our individual aspirations are willingly subordinated.

(Signed)

BERKELEY MOYNIHAN, President.
MALCOLM MORRIS, Vice-President and Rept. of the National Council for Combating Venereal Diseases.
THOMAS HORDER, Hon. Treasurer.
J. F. GORDON DILL, Hon. Treasurer.
CHARLES BUTTAR, Hon. Secretary.
JANE WALKER, Hon. Secretary.
JOHN ROSE BRADFORD, London and Counties Med. Protection Society.
H. W. BRUCE, Infirmary Medical Superintendents Society.
H. J. CARDALE, Assoc. of Panel Committees.
F. HERNAMAN-JOHNSON, British Assoc. of Radiology and Physiotherapy.
C. F. RILOT, British Dental Assoc.
RONALD ROSS, British Science Guild.
E. H. STANCOMB, Southampton Medical Parliamentary Committee.
E. H. WORTH, National Medical Union.

"*Postscript.*—The signatories of this memorandum represent organisations with a combined membership exceeding 16,000. In addition, a number of other medical societies represented in the Federation still have the matter under consideration and a majority of the professional bodies representative of pharmacy, nursing, midwifery, massage, radiography, &c., all of whom are members of the Federation and intimately concerned with the matter, have expressed a wish to subscribe to the memorandum, which, accordingly, has been submitted to their executives. These further names in support of those given will be forwarded at an early date as a supplementary list."

I am, Sir, yours faithfully,

N. HOWARD MUMMERY, General Secretary.

The Federation of Medical and Allied Societies (Inc.), 12, Stratford-place, W. 1, Oct. 4th, 1921.

THE MARRIAGE BAR.

To the Editor of THE LANCET.

SIR,—In an interesting report in your issue of this week you draw attention to the action of the Borough Council of St. Pancras in requesting one of its medical officers to send in her resignation because she has recently married. Allow me to point out that the Sex Disqualification (Removal) Act, 1919, enacts that: "A person shall not be disqualified by sex or marriage from the exercise of any public function or from being appointed to or holding any civil or judicial office or post, or from entering or assuming or carrying on any civil profession or vocation, or for admission to any incorporated society . . . . and a person shall not be exempted by sex or marriage from the liability to serve as a juror."

One or two qualifying provisions follow which have no bearing on the St. Pancras case.

I am, Sir, yours faithfully,

MARY D. STURGE, President of the Medical Women's Federation.

Oct. 1st, 1921.

THE DANGERS OF THE PUBLIC SWIMMING BATH.

To the Editor of THE LANCET.

SIR,—In the last three years we have had several cases of otitis media in Camberwell Infirmary, following visits to public swimming baths. On August 2nd of the present year, M. S., aged 19, was admitted with a history of three visits to the baths in the previous week, and earache on July 30th, followed by vomiting on the two next days. There were well-marked signs of meningitis when admitted, confirmed by lumbar puncture, a strepto-bacillus being found in the spinal fluid. Death occurred early on August 5th. Post-mortem showed pus in the left middle ear with unruptured drum and an acute lepto-meningitis. The lad was not accustomed to go to the baths and, perhaps, lacked an immunity more frequent visitors might possess.

During a hot summer, like the past, the numbers of bathers are multiplied many times, and the urgency for frequent change of water and its purification is proportionally increased.

I am, Sir, yours faithfully,

Oct. 4th, 1921. G. W. LLOYD.

To the Editor of THE LANCET.

SIR,—Acting upon Dr. F. W. Alexander's suggestion, I have turned to the Report of the Royal Sanitary Institute for information regarding the system employed at the Poplar baths for making and keeping bath-water pure, and I find that the bacterial content of the water may be kept within what may be considered to be the limits of safety for as long a period as a week or ten days at a cost, in 1912, of, apparently, about one shilling and threepence! Dr. J. Graham Forbes in his interesting survey of the methods of disinfecting the water alludes to the plan as giving good results. Surely, then, if this claim can be substantiated the bathing public has the right to ask why this or similar methods are not everywhere in use.

In my former letter I drew attention to the danger of purulent otitis media as a result of bathing in contaminated water. But my indictment does not stop at the ear. Since writing that letter I have seen a case of suppuration of the maxillary antrum in a schoolboy, which the parents ascribed to the same cause, and this case reminds me that some years ago Mr. C. W. M. Hope[1] brought before the Laryngological Section of the Royal Society of Medicine several cases of nasal sinus suppuration which he attributed to infection received during bathing.

While, however, it is but common sense to insist that the water people bathe in should be made as clean as possible, the alternative hypothesis of self-infection must not be lost sight of. And in this connexion Dr. Arnold Renshaw, of Manchester, has pointed out to me that the chilling effect upon the bather of too prolonged a stay in the water must operate powerfully in favouring auto-infection—and extraneous infection also for that matter. Is it too much to ask that a rule should be laid down limiting the period of stay in a public bath? As most of the cases one sees of ear and nose troubles due to this cause occur in children, the rule might be confined to bathers below a certain age.

I am, Sir, yours faithfully,

Wimpole-street, W., Oct. 3rd, 1921. DAN MCKENZIE.

THE NEGLECT OF SURGICAL ANATOMY.

To the Editor of THE LANCET.

SIR,—In his interesting and very important paper in your last issue on a form of injury in the region of the ankle-joint, Sir W. Arbuthnot Lane lets the fault—of improper comprehension and inefficient treatment—rest, "not with the surgeon, but with the teacher." The teacher to whom he refers in this disparagement is, of course, the teacher of surgical anatomy, and the context leaves the impression that his inefficiency is in some way the fault of the teachers of anatomy. This would not appear to be quite just, from the point of view of the anatomists, who might very well argue that it is their function to teach anatomy, while it is that of the surgeon to teach the surgical application of anatomy. So far as the mechanics of the skeleton are concerned, this comes in, naturally, in ordinary teaching in the

[1] Hope, C. W. M., Journ. of Laryng., vol. xxix., 1914, p. 507.

dissecting room. The student is supposed to come to the dissecting room with knowledge of the laws and principles of mechanics; in the dissecting room this knowledge is taken for granted, and its application to the structure of the human body, so far as limits of opportunity permit, is brought to his notice there; when he passes on into the hands of the clinicians it surely becomes a part of their business to show him what happens when the normal state is upset, for they must take for granted that he is acquainted with the normal by this time. It is no part of anatomical teaching in the intermediate years to deal with the results of injuries, though demonstrators in the dissecting room frequently point a moral, and, we hope, adorn a tale with some reference to the bearing of their point on some clinical state not beyond the comprehension of their hearers. The teaching of "surgical anatomy" would appear to be at fault. This unfortunate subject is mainly unfortunate in that it has been put into a compartment with a label of its own, nobody's child and everybody's whipping-boy, instead of running through the whole teaching of surgical diagnosis and treatment. One more point strikes me as calling for protesting comment in this matter: Is it fair to blame the teachers of his youth for the shortcomings of the mature practitioner? Surely a middle-aged man who fails to recognise what has happened in a large way to certain large bones about the ankle cannot be justified in saying that the fault lies with those who tried to instil principles into him 30 years earlier. If their pupils are never to develop their thinking minds, the ways of teachers will indeed be unhappy. But the main thing from the teachers' point of view is to insist on the application of anatomical mechanics to the understanding of injuries and disease being taught by the surgeons from day to day, and not left to the anatomists who may not have the experience, and certainly do not possess the material, to carry it out properly.

I am, Sir, yours faithfully,

Oct. 3rd, 1921. TEACHER OF ANATOMY.

CITY OF LONDON MEDICAL BOOK SOCIETY.

To the Editor of THE LANCET.

SIR,—Our unpretentious but lively little Society can now claim the distinction of having been in continuous existence for a hundred years. We possess the original minute-book recording the foundation of the Society by 20 general practitioners at a house in Frederick-place, Old Jewry, in September, 1821. The number of members is limited to 20, there is no subscription, fines for unpunctuality in forwarding books and for other misdemeanours provide a sufficient income, and, at the end of the year, the books are sold to the highest bidders among the members. An annual dinner is held, and failure to attend involves a fine equal to the cost of the dinner, so that we generally have a full gathering. We claim to be the oldest medical book society in the kingdom. This year the Centenary Dinner (Dr. A. T. Davies in the chair) is to be held at the Abercorn Rooms, Great Eastern Hotel, Liverpool-street, at 6.30 for 7 P.M., on Oct. 25th. All old members will be welcome if they will kindly intimate to me their intention of being present.

I am, Sir, yours faithfully,

ERIC BAYLEY.

21, Finsbury-square, E.C.2, Oct. 4th, 1921.

HISTORY OF BIOLOGY AND MEDICINE.—A course of lectures on the History of the Biological and Medical Sciences from the Earliest Times till the Seventeenth Century will be given by Dr. C. Singer at University College, Gower-street, London, on Thursdays, at 5 P.M., beginning Oct. 13th. A further course, bringing the history from the seventeenth century to the present day, will be given by Dr. Singer in the New Year. The lectures will be illustrated by lantern-slides. The fees are £1 11*s.* 6*d.* a term, and the course is open without fee to all students of the college.

The Services.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. and Bt. Col. E. E. Powell relinquishes the actg. rank of Col.

Maj. A. G. Cummins retires on ret. pay.

REGULAR ARMY RESERVE OF OFFICERS.

G. T. Baker, late Capt., R.A.M.C., to be Capt.

TERRITORIAL FORCE.

Maj. T. W. Banks, having attained the age limit is retired and retains the rank of Maj., with permission to wear the prescribed uniform.

Capt. F. W. C. Brown resigns his commn. and is granted the rank of Maj.

Capt. J. Kinnear (late R.A.M.C. Spec. Res.) to be Capt.

Capts. D. H. MacPhail, A. D. Downes, A. M. Stewart, and L. Beesley resign their commns. and retain the rank of Capt.

ROYAL AIR FORCE.

Dental Branch.—Flight-Lieut. G. Packham relinquishes his temporary commn. on ceasing to be employed, and is permitted to retain the rank of Capt.

THE MILITARY CROSS.

The King has approved of the Military Cross being given to Capt. Atul Krishna Kar, I.M.S., attd. 28th Punj., I.A., for distinguished service in the Field with the Waziristan Force, India:—

"On April 10th, 1921, during the action below Haidari Kach, this officer was sent out from camp to bring in wounded. All ranks of the regiment testify to his devotion and personal disregard to danger while binding up wounded and despatching them to camp under a heavy fire. Owing to his coolness and splendid organisation the wounded were systematically evacuated in very difficult circumstances."

DEATHS IN THE SERVICES.

Lieut.-Col. F. P. Maynard, I.M.S. (retd.), who died on Sept. 30th at Audlem, Cheshire, entered the Indian Medical Service in 1887 and afterwards became professor of ophthalmic surgery in the Medical College, Calcutta, and ophthalmic surgeon to the College Hospital. He was also surgeon superintendent of the Mayo native hospital. He had held the position of assistant editor of the *Ophthalmic Review*, published in London, of *Ophthalmology*, published at Seattle, and of the *Centralblatt für Praktische Augenheilkunde*, and published a "Manual of Ophthalmic Operations."

BIRMINGHAM DOCTORS AND THE PANEL SYSTEM.—A general meeting consisting of about 250 medical men was held on Sept. 30th under the auspices of the Birmingham Branch of the British Medical Association to hear an address by Dr. Alfred Cox on the National Health Insurance System. Dr. Thomas Wilson presided. Dr. Cox referred to the rumours that the remuneration of the insurance practitioners was to be reduced, and that the medical benefit part of the Insurance Act might even be abolished. He thought that the medical profession, after an experience of eight years, should say whether it believed it would be in the interest of the public and of the profession to drop the medical benefit or not. The national insurance system had not had a fair chance. It was born and spent its infancy in an atmosphere of politics and professional prejudice and fears. Then came the war and upset many of the calculations upon which it had been based, and made it impossible to introduce those developments which normally would have been introduced. Now attacks were made upon it by a large section of the press and by politicians in the interest of economy-at-any-price. Dr. Cox had no hesitation in saying that, with all its drawbacks and defects, the system was a great improvement on the conditions existing before the Act was introduced. It had given many working people access to medical treatment which they never had before except as a charity, and it gave the doctors payment for much work which they had previously done for nothing. The following resolution, proposed by Dr. H. G. Dain and seconded by Dr. T. M. Tibbetts, was carried unanimously:—

Where it is necessary to organise or provide a general practitioner's services for any section of the community unable to pay the ordinary fees, such service is best given on the lines of the present panel system; and this meeting *does* wish medical benefit under the National Health Insurance Acts to continue so long as the conditions are such as will allow of a good service being given.

Medical News.

UNIVERSITY OF DURHAM.—At a special Third Examination for the Degrees of Bachelor of Medicine and Bachelor of Surgery the following candidates were successful:—

Materia Medica, Pharmacology and Pharmacy, Public Health, Medical Jurisprudence, Pathology and Elementary Bacteriology.—Elizabeth M. Anderson, Sydney Basham, Derek C. Bell, William A. Brown, Laurence S. Henry, Bernard R. Isaacs, Louis Minski, Ian M. McLachlan, William A. D. Oliver, Leslie F. Richmond, Henry C. Rollin, William O. Rubidge, and Henry F. Wattsford.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.—The President and Fellows of the Royal College of Physicians have decided this year to revive the St. Luke's Day dinner of the College, which has not been held since 1913. The dinner will take place in the College Hall.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—The arrangements for conferring honorary fellowships by the Royal College of Surgeons in Ireland on eight American surgeons are now complete, and the delegation of the College appointed to confer the fellowships has left Dublin for the United States. The President is prevented by illness from travelling, and the Vice-President is also unable to leave Ireland at present. The College will be represented, however, by two of its most distinguished ex-Presidents, Sir Robert Woods, M.P., and Sir William Taylor, who are to visit Canada as well as the States in their tour. The compliment paid by the Irish College to American surgery has sprung out of the visit paid to America last year by Sir Berkeley Moynihan and Sir William Taylor on the occasion of the presentation of a mace by British surgeons to the American College of Surgeons.

MEDICAL SOCIETY OF LONDON.—The syllabus of the first half of the 149th session has now been issued. The president for the session is Mr. James Berry, who will deliver his presidential address on Some Medical Experiences in South Eastern Europe (illustrated by lantern slides), at 8.30 P.M., on Monday, Oct. 10th, following an annual general meeting at 8 P.M. On Monday, Oct. 24th, at 8.30 P.M., a discussion on The Modern Treatment of Diabetes will be introduced by Sir Archibald Garrod, to be followed by Sir William Willcox, Dr. O. Leyton, Dr. W. Langdon Brown, Dr. Edmund Spriggs, Dr. E. P. Poulton, Dr. George Graham, and Dr. P. J. Cammidge. Monday, Nov. 14th will be a clinical evening. On Nov. 21st a discussion on the Arseno-Benzol Treatment of Syphilis will be introduced by Lieut.-Colonel L. W. Harrison, followed by Prof. H. Maclean, Dr. J. W. McNee, Dr. R. L. Mackenzie Wallis, Dr. Henry MacCormac, and Mr. C. H. Mills. On Dec. 12th a paper on Hæmorrhagic Bronchitis of Non-Tubercular Origin will be read by Dr. Aldo Castellani, C.M.G., and a demonstration on Dust in Expired Air, given by Dr. J. S. Owens. The Lettsomian Lectures on Amœbic Liver Abscess: its Pathology, Prevention and Cure, will be delivered in February and March, 1922, by Sir Leonard Rogers, F.R.S. The annual oration will be delivered in May, 1922, by Mr. H. J. Waring. Fellows desirous of reading papers should communicate before the middle of December with the Hon. Secretaries, Mr. H. W. Carson and Dr. C. E. Lakin, at the house of the Society, 11, Chandos-street, Cavendish-square, London, W. 1.

ST. MARY'S HOSPITAL MEDICAL SOCIETY.—The sessional programme is as follows, the meetings being held at 8 P.M. in the library of the Medical School:—On Oct. 12th Prof. B. J. Collingwood will speak on Fear; on Oct. 26th Dr. Charles Singer will give a paper on Leonardo Da Vinci as a Man of Science and Anatomist, illustrated by lantern-slides; Mr. C. A. B. Horsford will give a paper on Nov. 16th entitled "Practical Application of Physiological Principles to the Training of the Voice," which will be illustrated by practical demonstrations; on Nov. 30th Prof. Elliot Smith, F.R.S., will speak on Diversions of an Anatomist in Egypt; and on Dec. 14th Dr. C. M. Wilson will give an address entitled "Apologia pro Genere Suo by a Physician." Sir Almroth Wright, F.R.S., will address the Society on Jan. 13th, 1922, on Morals, and on Jan. 27th Dr. Bernard H. Spilsbury will speak on a subject to be announced later. The meeting on Feb. 10th will be devoted to a paper on Sublimation in Psychotherapy, by Dr. J. A. Hadfield. On Feb. 23rd Dr. W. E. Dixon will speak on Tobacco Smoking. On March 10th Prof. A. L. McIlroy will discuss the Value of a Poetical Outlook on Science, and on March 24th Dr. Joseph Barcroft will retail Recent Experiences in the Andes. The President for the session is Prof. F. S. Langmead.

HARVEIAN SOCIETY.—A clinical meeting of this Society will be held at Paddington Green Children's Hospital on Thursday, Oct. 13th, at 4.30 P.M.

ABERNETHIAN SOCIETY.—The sessional address of this Society will be given on Thursday, Oct. 13th, at 8.30 P.M., at St. Bartholomew's Hospital, by Dr. Christopher Addison, on Medical Men and Public Life.

SOUTH-WEST LONDON MEDICAL SOCIETY.—The syllabus of meetings for 1921–22 has just been issued, the president for the year being Dr. E. J. Pritchard. On Oct. 12th the annual dinner will be held at Gatti's Restaurant, Strand. At the first meeting on Nov. 9th, Dr. T. Strickland Goodall will give a demonstration on the Rôle of the Electro-Cardiograph in Practical Medicine. The meetings are held at 9 P.M., at the Bolingbroke Hospital, Bolingbroke-grove, Wandsworth Common, London, S.W. Further information can be obtained from the hon. secretaries, Dr. H. B. A. Pearson, 29, Bolingbroke-grove, Wandsworth Common, S.W. 11, and Dr. C. Dudley Bishop, 60, North Side, Clapham Common, S.W. 4.

SOCIETE D'HYPNOLOGIE ET PSYCHOTHERAPIE.—The twenty-fourth annual meeting of the Society will take place on Tuesday, Oct. 18th, at 4 o'clock, and on Wednesday, the 19th, at 10 o'clock, at 49, rue St. André des Arts, Paris. The programme of the meeting will include an account of psychological work by Dr. Jules Voisin (perpetual president of the Society), and consideration of general questions of progress and present tendencies of psychotherapy, and of "race" in nervous and mental pathology, followed by individual communications. Medical men interested in psychotherapy are cordially invited to attend the meeting and to contribute papers. Communications should be addressed to Dr. Berillon, general secretary, 4, rue de Castellane, Paris 8e.

MIDLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—The annual meeting of this Society was held at the Medical Institute, Edmund-street, Birmingham, on Thursday, Oct. 6th, at 4.30 P.M., the Presidential Address on the Position of Obstetrics and Gynæcology under the Scheme of the Welsh Consultative Council of the Ministry of Health was delivered by Dr. Ewan Maclean. The following scientific meetings will be held during the session: At Bristol (Dec. 6th), at Birmingham (Jan. 3rd, 1922), at Derby or Leicester (March 7th), and at Cardiff (April 4th). Papers, short communications, and pathological specimens are invited. Papers and communications, accepted will, at the discretion of the Editorial Committee, be published in the *Journal of Obstetrics and Gynæcology of the British Empire.* The subscription to the Society is 10s. per annum, and the hon. general secretary of the Society is Mr. Beckwith Whitehouse, 52, Newhall-street, Birmingham.

GUILD OF ST. LUKE: ANNUAL SERVICE.—This service, which will this year take the form of a special thanksgiving for peace, will be held on Oct. 18th, at 7 P.M., at St. Paul's Cathedral. The preacher will be the Rev. Father Waggett, and the offerings, after defraying the cost of the service, will be devoted to one of the hospitals in London. Doctors and students are requested to wear academic dress.

KING'S COLLEGE HOSPITAL ANNUAL DINNER.—This dinner was held at the Café Royal, Regent-street, on Sept. 30th. Mr. F. F. Burghard, senior surgeon to the hospital, presided, and proposed the toast of the hospital, to which Viscount Hambleden, chairman of the committee of management of the hospital, replied. Dr. Norman Dalton, senior physician, proposed the toast of the chairman, which was received with musical honours. The attendance numbered a hundred, and included amongst others Lord Gorell, M.C., who had delivered the oration at the opening of the winter session earlier in the afternoon.

LONDON HOSPITAL MEDICAL COLLEGE: *Post-graduate course.*—The "Price" Entrance Scholarship in Anatomy and Physiology, open to students of the Universities of Oxford and Cambridge, has been awarded to Mr. G. L. Thompson of Trinity College, Cambridge. A course of instruction on the Diseases of Children will commence on Wednesday, Oct. 12th, 1921. It will include a course of 10 lectures on General Diseases, to be delivered by Dr. R. Hutchison on Saturdays at 10.15 A.M. in the Anatomical Theatre of the Medical College; a course of eight lectures on Organic and Functional Nervous Diseases and Mental Deficiency, to be given by Dr. Theodore Thompson on Mondays at 9.15 A.M. at the same place; and a course of clinical demonstrations, to be held by Dr. C. H. Miller on Wednesdays, at 10.15 A.M., in the children's out-patient department of the London Hospital. The course will be open to post-graduates and to students of the hospital.

MIDDLESEX HOSPITAL MEDICAL SCHOOL.—Entrance scholarships have been awarded to Mr. H. Mannington, Mr. R. A. Graff, and Mr. F. D. M. Hocking.

GUY'S HOSPITAL PHYSICAL SOCIETY. — The inaugural meeting will be held on Oct. 13th, when Sir Alfred Fripp will give an address. Subsequent meetings will be held on alternate Thursdays throughout the session.

GUY'S HOSPITAL MEDICAL SCHOOL.—The following entrance scholarships have been awarded :—Senior Science Scholarship for University students (War Memorial Scholarship), £75, Bernard G. Scholefield, Christchurch, Oxford. Entrance Scholarships in Arts, £100, Russell C. Brock, Christ's Hospital; £50, Arnim F. H. Stewart.

FOUR lectures on the Nervous System and the Mind, with its Normal and Abnormal States, will be delivered by Sir Robert Armstrong-Jones at Gresham College, Basinghall-street, London, E.C., on Oct. 11th, 12th, 13th, and 14th, at 6 P.M. Admission free to men and women.

PUBLIC HEALTH IN EDINBURGH.—On Sept. 16th the new offices of the Public Health Department in Edinburgh were formally opened by Lord Provost Hutchison, The building in Johnston Terrace was acquired in pre-war times for £3000, being formerly the Church of Scotland Normal Training College, and with internal reconstruction will have cost over £13,000.

KING EDWARD VII. HOSPITAL, CARDIFF.—Sir John Lynn Thomas, having celebrated his sixtieth birthday, is retiring from his position as senior surgeon at this hospital under the age-limit rule. The value of the pioneer work in surgery which he has done at Cardiff, not only at the King Edward VII. Hospital but also in setting on foot the Prince of Wales Hospital, is common knowledge. We are glad to think that his retirement only means that he will now have more time at his disposal for devoting to the many other schemes in which he is interested.

HARROGATE INFIRMARY JUBILEE.—The jubilee of Harrogate Infirmary was celebrated on Sept. 24th. After a reception held by the committee, the Mayor unveiled a brass tablet to commemorate the conversion of the hall into a ward during the war, and the treatment therein of over 600 sick and wounded soldiers. Another tablet was unveiled to commemorate the work of the Harrogate Women's Sewing League, which made nearly two million articles for surgical and medical use. Dr. W. Bain, who presided at the ceremony, said that the total number of in-patients during the 50 years of the hospital's existence had been 16,579, and the total number of out-patients 62,594.

RETIREMENT OF DR. N. H. CHOKSY.—The retirement at the beginning of August of Khan Bahadur Dr. N. H. Choksy from the Arthur Road Hospital, Bombay, serves to recall the great plague outbreaks of the end of the last century in that city, and the distinguished services rendered by him during that period of distress. A pupil of Henry Vandyke Carter at the Grant Medical College, Dr. Choksy took charge in 1892 of the Arthur Road Hospital, which was the only public hospital in Bombay at the beginning of the plague epidemics. The large number of deaths of patients was regarded with suspicion by the ignorant populace of the city, and the hospital premises had to be guarded by troops and police, whilst the doctor and his assistants found armed protection necessary in the streets. The work carried on by Dr. Choksy gained for him the complete and lasting confidence of the authorities and of the white population; for some years he had the care of a leper asylum, and in 1902 was put in charge of the Maratha Hospital, in addition to his work at Arthur Road. In his 34 years of service he dealt with 25 epidemics of plague, 16 severe epidemics of small-pox, 13 epidemics of relapsing fever, 6 of cholera, and 3 of influenza. The Government conferred upon Dr. Choksy the title of Khan Bahadur at the Diamond Jubilee of Queen Victoria in 1897; for his valuable researches into tropical diseases he received numerous foreign honours, including the M.D. (Honoris Causa) of the University of Freiburg, while his work became widely known throughout the world, many foreigners going to Bombay to study plague under his direction. After 1912 much of his spare time was devoted to the work of the King George V. Anti-Tuberculosis League; during the war nearly 1600 military cases of infectious diseases passed through his hands. Dr. Choksy carries with him into retirement the good wishes of all who know him. Amongst his writings were contributions to THE LANCET during the years 1907, 1911, and 1912, in which he dealt with the treatment of cholera and erysipelas and the propagation of plague.

William Domett Stone, M.D., F.R.C.S., who died in London on Oct. 1st in his eighty-second year, was a great traveller and, in his time, a great sanitary authority. His first contribution to THE LANCET, in 1865, dealt with workhouse reform.

A COURSE IN HELIOTHERAPY.—The success which attended the summer course of lectures and demonstrations given at Leysin during August by Dr. A. Rollier and his assistants has decided Dr. Rollier to repeat the course from Jan. 10th–14th, 1922. An invitation to attend will be sent to any medical man or woman expecting to be in Switzerland, on application to the Secrétariat Médical du Dr. Rollier, Leysin, Switzerland. Applications will be received up to Dec. 15th. Board and lodging (Fr.10 per day) will be reserved for those attending the course.

A MEDICAL OFFICER OF HEALTH'S SALARY.—The Town Council of the Royal Burgh of Stirling invite through the *Stirling Observer* applications for the appointment of medical officer of health, tuberculosis, maternity and child welfare, and V.D. officer, police doctor, and medical attendant at Combination Infectious Diseases Hospital. The combined salary for the work is put by the Council at £500 per annum and no private practice is permitted. The approval of the Scottish Board of Health is said to have been obtained for these terms, which are not likely to recommend themselves to candidates.

GENERAL NURSING COUNCIL FOR ENGLAND AND WALES.—The report of the Registration Committee states that, up to Sept. 30th, 1816 applications for registration have been received, and £1912 3*s.* 11*d.* has been received in fees. Three hundred and sixty-six nurses were recommended to the council for approval for registration on the general part of the register, their qualifications and references conforming in every particular to the rules: 14 for registration on the supplementary part for fever nurses; and one for registration on the supplementary part for mental nurses. These applicants were approved, and the council agreed to grant a certificate of registration to them. Applicants whose qualifications did not conform to the rules will receive a notification to this effect.

WELSH NATIONAL SCHOOL OF MEDICINE.—The reorganisation needed for carrying out the full curriculum of teaching which is now being embarked upon by the Welsh National School of Medicine is nearing completion. Both the new Board of Medicine and the new Faculty of Medicine have been called into existence. The most important post in this new school is that of dean, and the Faculty recently elected to this post Prof. David Hepburn. Prof. Hepburn has for over 17 years been professor of anatomy at Cardiff, and has acted as Dean of the Medical School, which has been incomplete until now. The experience he has gained in the past will thus be valuable to him in presiding over the full development of the school, to which he has for many years been looking forward. The honour given is great, but greater still is the responsibility, for the work of organising the new National School so as to ensure complete success will be no mean task.

INTERNATIONAL CONGRESS OF EUGENICS.—The second International Congress of Eugenics opened on Sept. 22nd at the American Museum of Natural History, New York. In his presidential address Prof. Henry Fairfield Osborn regretted the growth of an individualism which was threatening the existence of the family, and instanced New England, where large families had been replaced by one-child families; he foresaw a stage of families with no children, followed by the extinction of the old Republican stock. The American theory that immigrants rapidly became Americanised was worthless; the vices of commingled races were more surely perpetuated than their virtues. Major Leonard Darwin declared that the results for which eugenists were working might not become apparent for several hundred years, and emphasised the impossibility of attempting to regulate human mating by legislation. He deplored the popular misconception of eugenics which credited that science with the intention to abolish romance and introduce cattle-breeding principles into human domestic affairs. If young people were allowed to follow natural inclination, their mating would usually be wise from the standpoint of eugenics, which did not favour the abolition of love. Many marriages made for wealth or social position did not tend to better the human race. Dr. Charles Davenport, director of the department of genetics, New York, declared that the science of eugenics was sufficiently developed to permit of the determination of a child's parentage through its inherited physical traits. Attention was called to the fact that increasing numbers of persons contemplating marriage were availing themselves of expert advice.

NORTH-EASTERN ASSOCIATION FOR THE CARE OF THE FEEBLE-MINDED.—The annual meeting of the association was held at Monkton Hall, Jarrow, on Sept. 24th, Sir Thomas Oliver being in the chair. The financial statement for the year ended on July 30th was described as very satisfactory; a deficit of nearly £300 had been turned into a surplus of £165. The institute had its full complement of boys, but a number of Newcastle Union cases would shortly be transferred to Prudhoe Colony. In moving the adoption of the report presented by Mr. J. Stewart, Sir Thomas Oliver said that at the present time a feeble-minded boy was rarely seen, for most of them had been gathered into homes where they were trained and to some extent educated. It was a mistake, and in a sense a crime, to allow feeble-minded girls to have liberty. The physical and mental activities of defective children could be largely restored if the children were placed under proper treatment at an early age. Although the boys were received at Monkton Hall too late in their lives, many of them had been sufficiently restored to leave the home and earn something for themselves.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Oct. 10th.

WAR SECTION: at 5.30 P.M.
Presidential Address:
Sir John Goodwin, Director-General, A.M.S.: The Aftermath of War, with Reference to the Medical Service of the Army.

Thursday, Oct. 13th.

SECTION OF NEUROLOGY: at 8.30 P.M.
Presidential Address:
Mr. Percy Sargent, C.M.G., D.S.O., F.R.C.S.: Some Observations on Epilepsy.

Friday, Oct. 14th.

CLINICAL SECTION: at 5.30 P.M. (Cases at 5 P.M.)
Exhibition of Cases.

SECTION OF OPHTHALMOLOGY: at 8.30 P.M.
Demonstration (at 8 P.M.):
Miss Ida C. Mann: A Series of Models illustrating the Development of the Human Eye.
Papers:
Mr. J. Herbert Parsons: The Fourth Cranial Nerve.
Mr. Ernest Clarke: Milestones in Refraction Work.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Oct. 10th.—8 P.M., Annual General Meeting. 8.30 P.M., Presidential Address:—Mr. J. Berry: Some Medical Experiences in South-Eastern Europe (illustrated by lantern slides).

SOUTH-WEST LONDON MEDICAL SOCIETY.
WEDNESDAY, Oct. 12th.—Annual Dinner at Gatti's Restaurant.

HARVEIAN SOCIETY, Paddington Green Children's Hosp., W.
THURSDAY, Oct. 13th.—4.30 P.M., Clinical Meeting.

NORTH OF ENGLAND OPHTHALMOLOGICAL SOCIETY, at the Manchester Royal Infirmary.
FRIDAY, Oct. 14th.—2.30 P.M., Exhibition of (1) Anatomical Collection Illustrating the Eye and its Adnexa, prepared by Prof. Stopford; (2) Macroscopical and Microscopical Preparations of Pathological Conditions of the Eye by the Hon. Staff of the Royal Eye Hospital; (3) Collection of Drawings presented to the Royal Eye Hospital by Dr. Hill Griffith. Clinical Cases:—Mr. A. E. Burroughs: Conical Cornea successfully Treated with the Electric Cautery. Mr. J. Gray Clegg: Chronic Glaucoma in a Young Subject; Uveitis with Absolute Central Scotoma; Melanosis of the Eye, Temple, and Palate; Correctopia with Extreme Miosis. Mr. H. H. McNabb: Recurrent Neuro-fibroma of the Optic Nerve. Mr. W. Stirling: Recurrent Orbital Growth. 5 P.M., Election of New Members. Clinical Discussion. Papers:—Mr. Clegg: Abnormalities of the Visual Field—an Experience of 22 Years of Private Practice. A Preliminary Note on Uveitis with Absolute Central Scotoma. 7 P.M., Dinner at the Brazennose Club.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Oct. 10th.—10 A.M., Dr. G. Stewart: Neurological Department. 12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Dr. Simson: Diseases of Women. Dr. S. Pinchin: Medical Out-patients. 2.30 P.M., Mr. Addison: Demonstration of Cases (Surgical Wards). 5 P.M., Lecture:—Dr. A. Saunders: Digestive Troubles of Infancy.
TUESDAY.—10 A.M., Mr. Steadman: Dental Department. 11 A.M., Dr. McDougal: Electrical Department. 2 P.M., Dr. Burrell: Medical Out-patients. Dr. Pernet: Skin Department. 2.30 P.M., Dr. Pritchard: Demonstration of Cases (Medical Wards). 5 P.M., Lecture:—Dr. Pernet: Ringworm.
WEDNESDAY.—11 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Dr. Owen: Medical Out-patients. Mr. Gibb: Eye Department. Mr. D. Armour: Visit to Surgical Wards. 5 P.M., Lecture I.:—Mr. T. Gray: Surgery of the Mesentery.
THURSDAY.—11 A.M., Dr. Simson: Gynecological Demonstration. 2 P.M., Mr. MacDonald: Surgical Out-patients. Mr. D. Armour: Operations. 2.30 P.M., Dr. Saunders: Demonstration of Cases (Medical Wards). 5 P.M., Lecture I.:—Mr. Simmonds: Surgical Emergencies.
FRIDAY.—10 A.M., Mr. D. Buxton: Dental Department. 2 P.M., Dr. Burrell: Medical Out-patients. Mr. Sinclair: Surgical Out-patients. 2.30 P.M., Mr. Addison: Operations. 5 P.M., Lecture:—Dr. Burnford: Infective Endocarditis.
SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. Dr. Burnford: Visit to Medical Wards.
Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.
MONDAY, Oct. 10th.—11 A.M., Dr. Goodall: Out-patients, 2 P.M., In-patients. 5.30 P.M., Lecture:—Dr. J. Parkinson: Aortic Disease.
TUESDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 11 A.M., Dr. Price: In-patients. 2 P.M., Sir S. Russell-Wells: Out-patients.
WEDNESDAY.—10 A.M., Dr. Parkinson: Out-patients. 2 P.M., Dr. Moon: In-patients.
THURSDAY.—2 P.M., Dr. Price: Out-patients. Dr. Moon: In-patients. 6.30 P.M., Dr. Hamill: Out-patients.
FRIDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 2 P.M., Dr. Parkinson: Out-patients. 3 P.M., Dr. Parkinson: In-patients. 4 P.M., Dr. Hamill: In-patients.
SATURDAY.—10.30 A.M., Dr. Hamill: In-patients.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Oct. 13th.—4 P.M., Lecture:—Mr. O. L. Addison: Acute Infections of Bone.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
THURSDAY, Oct. 13th.—6 P.M., Chesterfield Lecture:—Dr. W. K. Sibley: General Principles of Treatment.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.
Post-Graduate Course on Infant and Child Welfare.
A Course of Twelve Lectures on the Management and Feeding of Infants and Young Children by Dr. E. Pritchard to Qualified Practitioners.
WEDNESDAY, Oct. 12th.—6 P.M., Lecture III.:—Breast Feeding.
FRIDAY.—6 P.M., Lecture IV.:—The Artificial Feeding of Infants (with Special Reference to Caloric Values, Balance Accessory Factors, &c.).

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, Oct. 11th.—4.30 P.M., Dr. W. Dyson: Skin Diseases in Children.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.
THURSDAY, Oct. 13th.—4.15 P.M., Mr. H. Buck: Minor Surgery.

Appointments

DRAPER, MARION, M.B., Ch.B. Leeds, has been appointed Assistant Medical Officer of Health for Swindon.
KIEP, W. H., M.B., Ch.B. Glasg., D.O. Oxon., to the Chair of Ophthalmology at the Cairo Medical College.
SIMMONDS B. S., M.S.Lond., F.R.C.S. Eng., Assistant Surgeon to the West London Hospital.
WALKER, D. I., M.B., Ch.B. Aberd., Assistant School Medical Officer to the Dundee Education Authority.
Certifying Surgeons under the Factory and Workshop Acts: HOSEGOOD, S. P., L.R.C.P.Lond., M.R.C.S., (Llanwrtyd Wells); MATHERS, J. A., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg. (Dunkeld).

Vacancies.

For further information refer to the advertisement columns.

Aberdeen University.—Lect. in Bio-Chemistry. £550.
Aberystwyth Infirmary and Cardiganshire General Hospital.—Res. H.S. £250.
Bethlem Hospital.—Res. H.P. £25 per quarter.
Birkenhead Borough Hospital.—Sen. H.S. £250.
Birmingham, Queen's Hospital.—Cas. S. £100.
Bradford Children's Hospital.—H.S. £180.
Bradford Royal Infirmary.—Two H.S.'s. £200.
Bristol General Hospital.—Hon. Ophth. Surg. H.S. Cas. H.S. Each £175.
Cairo, Egyptian Government School of Medicine.—Prof. of Pathology. L.E.1200–1440.
Cambridge, Addenbrooke's Hospital.—H.S. £130.

Cancer Hospital, Fulham-road, S.W.—First Asst. to Research Dept. £750.
Canning Town Women's Settlement Hospital, Balaam-street, Plaistow.—Female Sen. Res. M.O. £150.
Cardiff, King Edward VII. Hospital and Medical School.—Med. Supt. H.S. £200.
City of London Hospital for Diseases of the Chest, Victoria Park, E.—Phys. to Out-patients.
Clifton, York, North Riding Mental Hospital.—Sen. Asst. M.O. £500.
Croydon Public Health Department.—Asst. Res. M.O. at Borough Hosp. for Infectious Diseases. £350. Res. Med. Supt. at Borough Hosp. for Infectious Diseases and Asst. M.O.H. £500.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—Res. M.O. £200. H.S. H.P. Each £125.
Exeter City Mental Hospital.—M.O. £350.
Frimley, Brompton Hospital Sanatorium.—Asst. Res. M.O. £250.
Glasgow, Hawkhead Asylum, Cardonald.—Asst. M.O. and Pathologist. £275.
Gloucester County and City Tuberculosis Institution, Standish, near Stonehouse.—Med. Supt. £500.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Res. M.O. £500. H.P. £50.
Hospital for Sick Children, Great Ormond-street, W.C.—Res. Asst. Cas. O. Res. H.P. Each £50.
Leeds General Infirmary.—Anæsth. £25.
Leeds Public Dispensary.—Sen. Res. M.O. £250.
London Fever Hospital, Islington, N.—Hon. Asst. Phys. Hon. Aural Surg.
London Homœopathic Hospital, Great Ormond-street and Queen-square, Bloomsbury, W.C.—Anæsth. £50. Asst. Phys.
Metropolitan Hospital, Kingsland-road, E.—Cas. O. and Res. Anæsth. £120. Sen. H.P. Sen. H.S. Asst. H.P. Asst. H.S. Each £100.
Miller General Hospital for South East London, Greenwich-road, S.E.—Res. Cas. O. £200. Hon. Asst. Ophth. Surg.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Res. H.P.'s and H.S.'s. £50. H.S. to Out-patient Dressing Department. £100.
Oldham County Borough Education Committee.—Asst. Sch. M.O. £500.
Oldham Royal Infirmary.—Sen. H.S. £200.
Perth, Murray Royal Mental Hospital.—Asst. M.O. £350.
Plaistow Fever Hospital.—Second Asst. M.O. £200.
Preston and County of Lancaster Royal Infirmary.—H.S. £200.
Royal Free Hospital, Gray's Inn-road, W.C.—H.S. £50.
Sheffield Royal Infirmary.—H.S. H.S. for Ear, Nose and Throat. Asst. Cas. O. Each £150.
Singapore, Government Medical School.—Professors of Physiology, Anatomy, Medicine, Midwifery and Gynæcology. £1190. Lecturers in Chemistry and Physics, Biology. £840.
Stafford, Staffordshire General Infirmary.—H.P. £200.
Wakefield, Clayton Hospital.—H.S. £225.
Wolverhampton and Staffordshire General Hospital.—H.S. £200.

Births, Marriages, and Deaths.

BIRTHS.

JONES.—On Sept. 24th, at Ashley Gardens, Westminster, the wife of Albert Eastwood Jones, M.D., M.R.C.P., of a son.
LIGHTWOOD.—On Sept. 27th, at a nursing home, Colwyn Bay, the wife of Eric Lightwood, M.B., B.S., of a daughter.

MARRIAGES.

LLOYD—SWINNEY.—On Sept. 27th, at St. Martin-in-the-Fields, London, Edmund Eyre Lloyd, M.R.C.S., L.R.C.P., to Margaret Mary, widow of John Swinney.

DEATHS.

HOOPER.—On Sept. 29th, at the Red Lodge, Aldeburgh, Suffolk, Colonel Sir William Roe Hooper, K.C.S.I., I.M.S. (retired), F.R.C.S., Hon. Surgeon to the King, aged 84 years.
JONES.—On Sept. 29th, at Westcliff Parade, Southend-on-Sea, George Francis Jones, M.R.C.S.Eng., L.S.A. Lond., aged 76 years.
MAYNARD.—On Sept. 20th, of double pneumonia, at Audlem, Cheshire, Lieut.-Colonel F. P. Maynard, F.R.C.S., I.M.S. (retired).
MILLER.—On Oct. 2nd, of syncope, James Duff Miller, M.B., C.M., L.S.A., late of 62, Rotherfield-street, N.1. Sudden death a great shock to all his relatives and friends.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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MEDICAL MISSIONS IN CHINA.[1]

BY HAROLD BALME, F.R.C.S. ENG., D.P.H.

BEFORE I speak of medical mission work as I have seen it in China it is not out of place to recall the medical efforts of the early Church. It was a Christian woman, Fabiola, who founded the first hospital for institutional treatment of the sick in the Western World; Basil, Bishop of Cæsarea, organised the first leper asylum, and the monk Thasalius was responsible for the first asylum for the blind; a Christian merchant, Apollonius, opened a free dispensary; and the Christian Council of Nicæa ordered the foundation of a public institution for the care of the poor in every Christian city.

The practice of mercy has long overflowed the borders of the Christian Church, and in a country such as our own we think of care and responsibility for the sick as hardly touching the activities of the Church; but as was pointed out in last year's Lambeth Conference Report, this care and responsibility has never been removed from the Church.

Pioneers.

In Moslem countries, in China, in Africa, and other places superstition and cruelty are still connected with sickness; preventable suffering is always evident to every missionary doctor and nurse. Few of us in these days have any conception of the difficulties which the pioneers of medical mission work in China had to overcome a hundred years ago. It must be remembered that the reputation of the medical profession in China was then as low as it could possibly be. Abbé Huc, who travelled in China, Tartary, and Thibet, says in one of his writings that the profession of medicine in China was nothing but "a waste pipe, with which to clear off those who are fit for nothing else." This was literally true, with the result that China was swamped with doctors, thousands of whom had no education at all. And what he said has been echoed by every other visitor to China. Anyone was free to practise; anyone was free to call himself a doctor, without any diploma, or college training whatever. The pioneer medical missionaries had to redeem the reputation of medical science in the country before they could make any headway at all. They had to deal with a hostile and suspicious people; and they had to win their way by patience and by the success of their work. They had no equipment, no instruments, no staff; nothing but a strong sense of their double calling, but they went forward and carried on the work with the thought that one day China would produce her own doctors and nurses, and realise her responsibility to her people.

Kenneth Mackenzie, of the London Missionary Society, first started a medical college in China, in 1881. During the Boxer rising of 1900 the results of the work done seemed entirely swept away; but a renewed effort led to the establishment of the inter-denominational medical college in Peking, now financed entirely by the Rockefeller Foundation, although the missionary societies have a voice in its general direction, and in the selection and appointment of the medical staff.

From the small beginning made in Peking branches of the work have spread in other parts of China, and here and there small medical colleges were founded. They were very poorly equipped and manned, but without them even the present condition of medical education would have been impossible. As the Chinese themselves began to recognise the work, it became evident that efficient medical education was absolutely impossible to obtain without a great deal of coöperation, and a willingness to sacrifice local interests to a certain extent. Instead of having a great number of small, understaffed, and inadequately supported colleges, we realised that it is necessary to concentrate on a few, with a staff of well-trained men, and in that way to make a real contribution to the new life of China. It is sometimes urged that in face of the physical needs of the Chinese these institutions should be multiplied; but medical missions do not exist to meet a temporary need; their aim is to sketch an outline for the Chinese to fill in for themselves.

In the Shantung Christian University, with which I am connected, ten missionary societies are represented, and not only has there never been any theological difficulty in the college, but the institution has been able to make an impression on the medical work of China far greater than

[1] An abstract of an address delivered at a meeting of the Medical Missions Department of the Society for the Propagation of the Gospel in Foreign Parts.

the sum of its individual units, standing for economy of work and administration, and proving to the Chinese that the profession of different forms of Christianity does not hinder coöperation in medical matters.

Hospital Work and Nursing.

The students come from every part of China, mostly out of our missionary colleges—not because Government students are not willingly accepted, but because, in the present condition of State education, few Government students have been able to attain matriculation standard. That condition of things will soon pass; one progressive governor is already having our examination held in his own capital every year, and helping to prepare students for it; those who pass are coming to our Christian University, in order that they may eventually return and help to staff a medical college which he is building in his own capital—all this in spite of the fact that ours is a purely Christian institution. Our students come to us for seven years, and owing to this concentration which I have just mentioned, we now have a staff of over 20 whole-time teachers. We never regret it when we see our students going into private practice, or into the public service; but naturally we like best to see students voluntarily choose the service of the mission hospital, instead of the better-paid service of the Government institution. Of our 53 last year's graduates, 46 are in mission hospitals. Our total number of graduates up to the present time is 115; of these 110 have served for periods in mission hospitals, and over 80 are in that service to-day.

The development of the medical profession in China has been followed by that of the nursing profession. Ten years ago, except at the Treaty ports, it was impossible to get any educated girl to touch the work of nursing; to-day there are 52 training schools for nurses, all of them giving standardised training, in most cases a four years' course. All these training schools are connected with medical missions. Education and scholarship have always been considered highly in China, and to-day the Chinese are losing their superstitions and changing their ideals; it is in the power of the new nursing service to exercise a great influence in the country at the present time. It is a great privilege to take some part in the education of the men and women who will be the future doctors and nurses of China; we of the medical missions feel that in these days we have a splendid opportunity offered us at a time when the Chinese people are perhaps more impressionable than ever before in their history.

LOOSE NECKWEAR IN EPILEPSY.

To the Editor of THE LANCET.

SIR,—In view of the ridicule excited by my first pamphlet on "Cerebral Congestion and Tight Neckwear" published some years ago, ridicule especially directed to my observations concerning tight neckwear and epilepsy, I now relate the following case:—

On May 1st, 1921, I saw a woman, aged nearly 50, who had been subject to epilepsy since she was eight years old. She had sometimes had as many as five or six fits a day, and had rarely been many days free from them. She had been under many different doctors at different institutions. The only treatment I suggested was perfectly loose neckwear with no neck ribbon or neck chain. She at once took my advice, and up to Sept. 18th, nearly five months afterwards, she had only had about five fits—i.e., rather less than she had often had previously in a single day.

A few years ago I had treated in a similar way a somewhat similar case, a woman of 32 or 33, who had been epileptic for some 25 years. The seizures gradually died away and for some years she has been free from them and is in very much better general health.

I may add that I have retired from practice for many years.—I am, Sir, yours faithfully,

WALTER G. WALFORD, M.D.

Finchley-road, London, Sept. 19th, 1921.

"THE GATEWAY TO HEALTH."

IN May, 1920, a conference on the prevention of dental caries, held at Manchester under the auspices of the Food Education Society, was widely attended by medical men, dentists, and public officials, who discussed on basic principles the relations between good teeth and national health. The proceedings of this conference have now been edited by Mr. Chas. E. Hecht, M.A., and published in convenient book form with the above title at the St. Catherine Press (pp. 434, price 12*s.* 6*d.*). Prof. J. G. Adami's inaugural address to the conference may be studied with advantage now, when the new Dentists Act is on the point of coming into force. Mr. Hecht has incorporated a large number of striking facts and statements which will be useful to public speakers. A first-rate index renders reference easy.

AIR TRAVEL IN FRANCE.

COMMERCIAL aviation has only existed in France for two years, but during this time numerous air services have been established under the supervision of Mr. Laurent, Under-Secretary of State for Aeronautics, assisted by Colonel Saconney, Director of Air Services. The State grants bounties to the companies based on the number of kilometres traversed, and last June French air companies carried 1553 passengers, against 400 at most carried by British companies.

The *Economic Review* gives from French sources a schedule of the traffic carried in 1919 and 1920:—

	1919.	1920.
Paying passengers	729	5,864
Goods (kg.)	14,080	121,195
Mails (kg.)	466	5,967
Completed journeys ..	1,173	4,052
Kilometres traversed ..	354,115	1,503,071

The longest journey at present undertaken is that from Toulouse to Casablanca, Morocco, performed four times weekly in each direction.

Toulouse	dep. 10.30 A.M.	
Barcelona	arr. 1.0 P.M. / dep. 2.30 P.M.	lunch.
Alicante	arr. 6.0 P.M. / dep. 6.0 A.M.	spend the night.
Malaga	arr. 11.30 A.M. / dep. 1.0 P.M.	lunch.
Rabat	arr. 4.0 P.M.	
Casablanca	arr. 5.30 P.M.	

Other foreign services are: Paris (le Bourget) to London (Croydon), four times daily in each direction in 2½ hours (two English companies perform the journey twice daily in each direction); Paris–Brussels (2 hours)–Amsterdam in 4 hours 45 minutes; Paris–Strasbourg–Prague (7 hours); Warsaw, daily (except Sunday) in 12½ hours, carrying the mails; Bayonne–Bilbao–Santander daily in 2½ hours. Services within France include: Bordeaux–Toulouse–Montpellier, in 3½ hours; Montpellier–Nimes–Avignon–Nice, twice weekly in each direction in 2¾ hours.

THE PRESS CONGRESS AT HONOLULU.

FROM Oct. 11th to the 25th a Press Congress of the World will take place at Honolulu, on the island of Oahu, an eminently suitable theatre for the expression of international interest and goodwill. Situate in mid-Pacific, the Hawaiian (Sandwich) Islands are already occupied by a mixed population, the different elements of which have learnt to live together in amity; the climate is one of the best in the world, and the city of Honolulu, "the Paradise of the Pacific," will prove an ideal centre for the Congress. The business sessions will be held in the throne room of the royal palace of the Hawaiian monarchs. The programme of entertainments has been planned to display every phase of the life of the islands. Among the excursions of interest will be a visit to the great volcano of Kilauea on the island of Hawaii, and a distant glimpse will be obtained of the leper settlement at Kalaupapa on the northern coast of the island of Molokai. One day of the Congress will be set aside for the holding of a Pan-Pacific Press Conference under the auspices of the Pan-Pacific Union for frank discussion of problems of the Pacific.

PHYSIOLOGY AND HYGIENE FOR CHILDREN.

THE Modern Physiology, Hygiene and Health School Series, which is under the general editorship of Dr. William F. Russell, is designed to induce children to think about health. In two volumes[1] of this series, entitled "The Most Wonderful House in the World" and "The Play House," by Mary S. Haviland, Research Secretary of the National Child Welfare Association, the author has, in her own words, tried "not to convey the maximum number of facts, but to arouse the maximum degree of interest. Facts may be quickly forgotten, but interest, once fully aroused, never quite dies." "The Most Wonderful House in the World" is a primer dealing with the mechanism and hygiene of the body, and is suited for the use of quite young children. No attempt is made to cover the whole field of physiology, but such questions as water, food, indigestion, sleep, and clothes are discussed in a way calculated to appeal to the mind of a child. The volume entitled "The Play House," dealing with questions of home hygiene, is slightly more advanced. Both books are pleasant in design and execution and can scarcely fail to interest children in the workings of the human machine and in the laws of hygiene and health, though we opine that some of the more astute may be secretly scornful of the artificial family whose recited adventures veil so much useful information.

[1] London, Philadelphia, Chicago: J. B. Lippincott Co. 1921. Pp. 204 and 196. 4*s.* 6*d.* each.

THE VARYING TOXICITY OF NEOARSPHENAMIN.

IN a recent issue of the *Journal of Biological Chemistry*, the chemistry of neoarsphenamin (neosalvarsan) and its relation to toxicity is discussed by G. W. Raiziss and M. Falkov, who have devised methods for the quantitative study of neosalvarsan with especial reference to the sulphur distribution. A low arsenic content may be due to the presence of uncombined sodium formaldehyde sulphoxylate, sulphate or chloride. In good samples the arsenic-nitrogen ratio may equal the theoretical value, and may be taken as an index of purity. The amount of iodine necessary for complete oxidation is in excess of that required for the arsenic group, the excess is attributed to uncombined sodium formaldehyde sulphoxylate, the latter, however, when combined with an amino-group is apparently not oxidised by iodine. The authors conclude that the variation in the substitution in the amino-groups may account for the irregularity of the toxicity and therapeutic effect of this drug.

THE SUPPLY OF ANATOMICAL MATERIAL.

AT a recent meeting of the Romford guardians discussion arose on the evergreen topic of sending bodies to the anatomical schools, the particular case of disposal of the body of an old Indian Mutiny veteran being mentioned. With reference to this last it would surely seem to be the privilege of the War Office to accord to an old veteran the honour of a military funeral, and it would seem equally surely to have been the duty of the guardians to see that the War Office was notified of his death, and not to hurry the corpse off to the "anatomical authorities." But, so far as concerns the general question of anatomical supply, there ought to be no option given to guardians or other vote-catching local celebrities, who know nothing and care less about the vitally important questions concerned. Some may have honest qualms about the matter, though they may be unreasonable, but spurious excitement should be rendered ineffective by leaving the decision in the hands of an educated authority acquainted with the urgent needs of anatomy and yet not devoid of ordinary feelings of humanity.

COLONIAL HEALTH REPORTS.

Barbados.—According to a report for 1919–20 prepared by Mr. Francis Jenkins, Colonial Secretary, the estimated population was 200,368. The birth-rate for the year was 27·5 and the death-rate 30·9 per 1000. No serious epidemic occurred, but typhoid fever was persistent in one district. An offer was made to the Government by the International Health Board (Rockefeller Institute) to initiate a campaign against ankylostomiasis provided that the sanitation of the country districts was improved beforehand by the general adoption of pit latrines for the disposal of excreta. This proviso was not favourably received by the responsible parochial authorities and the Government was in consequence compelled reluctantly to decline the generous offer. Under the head of "Climate" the report says: "Barbados is the healthiest of all the West Indian Islands, and is much patronised by the residents in neighbouring colonies as a health resort. The anopheles mosquito is not found in the Island. The temperature throughout the year varies, as a rule, from 74° to 84° F. The hot and rainy season lasts from the beginning of June to the beginning of November. The island gets the full benefit of the north-east trade-winds, and between November and May the night temperature sometimes falls as low as 64° F. The winter months are regarded as the tourist season. Barbados lies almost out of the track of hurricanes, though it is a matter of history that hurricanes have swept over the island at intervals, notably in 1780, 1831, and 1898, and have done great damage."

Leeward Islands.—The estimated population on Dec. 31st, 1919, was in Antigua 31,063; St. Kitts, 27,193; Nevis, 14,390; Anguilla, 4988; Dominica, 40,315; and Montserrat, 11,168. The birth-rate for the year 1919–20 was 34·1 per 1000 in Antigua, 30·6 in St. Kitts, 30·0 in Nevis, 38·5 in Anguilla, 37·9 in Dominica, and 34·3 in Montserrat, whilst the death-rate, taking the provinces in the same order, was 26·9 per 1000, 25·2, 20·4, 26·4, and 17·5. The general health of the Colony was satisfactory, but no great advance in health and sanitary conditions will be made until the people as a whole are brought to realise the importance of cleanliness in elementary habits and of ventilation and a well-regulated diet, especially for infants. During the year 3688 patients were admitted into the hospitals, and of these 335 died. The average number of inmates in the Central Lunatic Asylum at Skerretts, Antigua, was 158. There are two leper asylums, one at Rat Island, Antigua, and the other at Fort Charles, St. Kitts. The average daily number of inmates in the former was 30 and in the latter 73.

Bermuda.—In the report for 1920 it is stated that the civil population is estimated at 21,987—7509 white and 14,478 coloured. The birth-rate was 20·1 per 1000 among the whites and 29·35 among the coloured population, the death-rate being 12·24 for the former and 18·57 for the latter. In regard to public health the general conditions are very good, and with a little improvement in certain directions could be made almost beyond fault. There are no tropical diseases other than an occasional mild type of fever diagnosed as dengue. This, however, is neither frequent nor widespread. Malaria is unknown. A certain amount of tuberculosis (34 deaths in 1920) is found, which is often contracted by the coloured inhabitants who leave the islands to work in northern climates. Having contracted it they return to the colony, where it develops and sometimes is conveyed to other members of the family. During the summer months there is a good deal of enteritis among children, which can, however, be avoided by care in keeping food, milk, &c., free from flies and perfectly fresh. A mild type of typhoid also occurs spasmodically in the summer months, but is not common and seldom spreads. Each house has its own rain-water cisterns, the only water-supply, so that infection is rarely spread through infection of water. With ordinary care and cleanliness these infections can be and are avoided by the vast majority. Taken all round, the climate and conditions make Bermuda one of the healthiest spots in the Empire. The very agreeable character of the climate during the greater part of the year no doubt is of great value in the preservation of health. There are no extremes of heat or cold, and even during the summer months of July, August, and September the atmosphere, though at times enervating and excessively humid, is not really trying to those who get sufficient outdoor exercise. The social condition of the coloured population is greatly superior to the average in most colonies of similar character, as will be readily apparent to any observer who notes their neat, substantial dwellings and general orderly behaviour. There are very few paupers. About 12,000 tourists are estimated to have visited the colony during 1920. The "season" runs from November to the end of April or early May. The outlook for the tourist industry is excellent. The steamers provided by the New York–Bermuda service are fast and admirably equipped, and local attractions are being developed.

THE USES OF DOG.

THOSE who are interested in the promotion of Bills to prevent experimentation with dogs might feel tempted to extend their measures to include an interdiction of the therapeutic uses of the same animal, were they to study Dr. J. Roshem's witty essay in a recent number of the *Paris Médical*.[1] He has discovered in the pages of a French periodical, published on August 27th, 1759, a recipe for the preparation of *bouillie* to be applied to gouty joints, the virtue of which only appears when a puppy is introduced to the sick room. The smell of the preparation attracts his attention. He is encouraged to taste it and so lured to his misfortune, for the hapless dog speedily swallows not only the dish prepared for him, but if we must believe the journal, much more beside: "The friction of his tongue upon the patient's skin opens the pores, favours the introduction of the saliva, as well as perspiration, and the consequent escape of that part of the gout which lies nearest the epidermis and so on successively until all the morbid material is destroyed." Destroyed, that is to say, from the patient's point of view, for the pseudo-scientific explanation is merely the cloak of a superstition which is found at all times (even to-day) and amongst all peoples and which teaches that disease may be transmitted from the afflicted body to another which is young and vigorous.

The dog is also valuable after death. It is interesting to note that Dr. Lémery's only comment on the puppy ointment which appears in his pharmacopœia[2] is that the proportion of puppy derivatives—fat, spinal cord, and oil—is too low. There are to be found in the same work recipes for puppy oil and puppy liniment. The latter, a mixture of dog and mole, is a sovereign remedy for sciatica and rheumatism. It would be interesting to trace the origin of this form of treatment.

A. D.—A new edition of W. B. Cannon's "Bodily Changes in Pain, Hunger, Fear and Rage" appeared in 1920, and was reviewed in THE LANCET, 1920, ii., 75.

Corrigendum.—In the report of the Industrial Welfare Conference at Oxford appearing last week, the name of the representative of the Trade Union Congress should read Mr. F. Bramley.

THE Medical Branch of the Board of Education has been transferred from Bridgewater House, Cleveland-square, London, S.W. 1, to Nos. 5 and 6, Clement's Inn, Strand, W.C. 2. (Telegraphic Address, "Meducation Estrand, London.")

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[1] De Quelques Usages Médicaux et Paramédicaux de l'Ami de l'Homme, Paris Méd., Sept. 17th, 1921.

[2] Pharmacopée Universelle contenant toutes les Compositions de Pharmacie. Published by De Saint et Saillant. Fifth edition. 1763.